

QUIZ-COMPENDS

GYNÆCOLOGY

WELLS

47210940R



NLM 05242315 3

NATIONAL LIBRARY OF MEDICINE

SURGEON GENERAL'S OFFICE
LIBRARY

Section

Form 113c No.
W. D., S. G. O. .

2927381

GOVERNMENT PRINTING OFFICE

A

COMPEND OF GYNECOLOGY.

SECOND EDITION.

WELLS.

From The Southern Clinic.

"We know of no series of books issued by any house that so fully meets our approval as these ?Quiz-Compendis?. They are well arranged, full, and concise, and are really the best line of text-books that could be found for either student or practitioner."

BLAKISTON'S ?QUIZ=COMPENDIS?

The Best Series of Manuals for the Use of Students.

Price of each, Cloth, \$0.80 net. Interleaved, for taking Notes, \$1.25 net.

These Compendis are based on the most popular text-books and the lectures of prominent professors, and are kept constantly revised, so that they may thoroughly represent the present state of the subjects upon which they treat.

The authors have had large experience as Quiz-Masters and attaches of colleges, and are well acquainted with the wants of students.

They are arranged in the most approved form, thorough and concise, containing over 600 fine illustrations, inserted wherever they could be used to advantage.

Can be used by students of any college.

They contain information nowhere else collected in such a condensed, practical shape.

Illustrated Circular Free.

- No. 1. **POTTER'S ANATOMY.** Sixth Revised and Enlarged Edition. Including Visceral Anatomy. Can be used with either Morris' or Gray's Anatomy. 117 Illustrations and 16 Lithographic Plates of Nerves and Arteries, with Explanatory Tables, etc.
- No. 2. **HUGHES, PRACTICE OF MEDICINE.** Part I. Sixth Edition, Revised, Enlarged, and Improved.
- No. 3. **HUGHES, PRACTICE OF MEDICINE.** Part II. Sixth Edition, Revised, Enlarged, and Improved. These two books furnish a complete set of notes on the Practice of Medicine, including Nervous and Mental Diseases.
- No. 4. **BRUBAKER. PHYSIOLOGY.** Ninth Edition, with new Illustrations and a table of Physiological Constants. Enlarged and Revised.
- No. 5. **LANDIS. OBSTETRICS.** Sixth Edition. Revised and Edited by WM. H. WELLS, M.D., Instructor Jefferson Medical College, Phila. 47 Illustrations.
- No. 6. **POTTER. MATERIA MEDICA, THERAPEUTICS, AND PRESCRIPTION WRITING.** Sixth Revised Edition. Based on the new U. S. P.
- No. 7. **WELLS. GYNÆCOLOGY.** Second Edition. With many Illustrations.
- No. 8. **GOULD and PYLE. DISEASES OF THE EYE AND REFRACTION.** Including Treatment and Operations and a Section on Local Therapeutics. With Formulæ and 109 Illustrations, several of which are in Colors. Second Edition.
- No. 9. **HORWITZ'S SURGERY, Minor Surgery, and Bandaging.** Fifth Edition, Enlarged and Improved. With 98 Formulæ and 167 Illustrations.
- No. 10. **LEFFMANN. CHEMISTRY. Inorganic and Organic.** Fourth Edition. Including Urinalysis, Animal Chemistry, Chemistry of Milk, Blood, Tissues, the Secretions, etc. Revised in accordance with new U. S. P.
- No. 11. **STEWART. PHARMACY.** Fifth Edition. Based upon Prof. Remington's Text-Book of Pharmacy. Carefully revised in accordance with the new U. S. P.
- No. 12. **BALLOU. VETERINARY ANATOMY AND PHYSIOLOGY.** With 29 graphic Illustrations.
- No. 13. **WARREN. DENTAL PATHOLOGY AND DENTAL MEDICINE.** Third Edition, Illustrated. Containing all the most noteworthy points of interest to the Dental Student and a Section on Emergencies.
- No. 14. **HATFIELD. DISEASES OF CHILDREN.** Colored Plate. Second Ed.
- No. 15. **HALL. GENERAL PATHOLOGY AND MORBID ANATOMY.** 91 handsome Illustrations. By H. NEWBERRY HALL, PH.G., M.D., Professor of Pathology and Medical Chemistry, Chicago Post Graduate Medical School. 2d Ed.
- No. 16. **SCHAMBERG. DISEASES OF THE SKIN,** with many Illustrations.

Price, each, \$0.80 net. Interleaved, for taking Notes, \$1.25 net.

**P. BLAKISTON'S SON & CO., PUBLISHERS,
PHILADELPHIA.**

?QUIZ-COMPENDS? No. 7.

A
COMPEND
OF
GYNECOLOGY

BY

WILLIAM H. WELLS, M.D.,

ADJUNCT PROFESSOR OF OBSTETRICS AND DISEASES OF INFANCY IN THE PHILADELPHIA
POLYCLINIC; INSTRUCTOR OF CLINICAL OBSTETRICS IN THE JEFFERSON MED-
ICAL COLLEGE; FELLOW OF THE COLLEGE OF PHYSICIANS OF PHILA-
DELPHIA AND OF THE GYNECOLOGIC SECTION THEREOF;
LATE ASSISTANT IN THE OUT-PATIENT GYNeco-
LOGIC DEPARTMENT OF THE JEFFERSON
MEDICAL COLLEGE HOSPITAL, ETC.

WITH ILLUSTRATIONS.

202:38

PHILADELPHIA :
P. BLAKISTON'S SON & CO.,
1012 WALNUT STREET.
1899.

000543
68.54



Chase

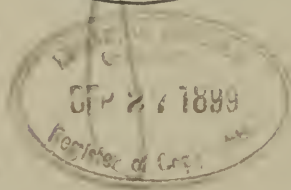
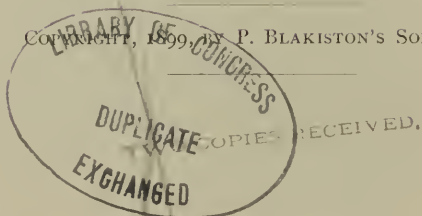
WP

140

W4562

1899

LIBRARY OF CONGRESS
Copyright, 1899, by P. BLAKISTON'S SON & CO.



FIRST COPY.

PRESS OF WM. F. FELL & CO.,
1220-24 Sansom Street,
PHILADELPHIA.

62700.
Sep. 27.99.

PREFACE TO SECOND EDITION.

The very kind manner in which the first edition of this little book has been received by the medical profession has encouraged the author to publish a second. Quite a considerable number of changes have been made in this new edition, particularly in the field of operative gynecology, these being rendered necessary by the wonderfully rapid progress in this branch of surgery. The author has endeavored to correct a number of errors, typographical and otherwise, which appeared in the first edition. Several recent methods of diagnosis and treatment have been either added or, in some cases, substituted for those which were in vogue when the first edition was printed. By the kindness of the publishers several new illustrations have been introduced. The author desires to tender thanks to his friend, Dr. Wilmer Krusen, for his kindly aid and suggestions, and to Dr. P. Clarkson Ellis, for notes on recent literature. To Dr. L. F. Appleman the author is indebted for the index.

333 Pine St., September 25, 1899.

TABLE OF CONTENTS.

	PAGE
ANTISEPSIS IN GYNECOLOGY,	17
GYNECOLOGIC EXAMINATION,	26
Position of the Patient,	28
GYNECOLOGIC DIAGNOSIS,	31
Percussion and Auscultation,	32
THE EXTERNAL GENITALIA,	58
DISEASES OF THE EXTERNAL GENITAL ORGANS,	61
Vulvitis,	61
Pruritus Vulvæ,	67
Cyst of Vulvovaginal Gland,	67
Abscess of the Vulvovaginal Gland,	68
Hernia into the Labium Majus,	69
Hydrocele of the Round Ligament,	70
Pudendal Hematoma,	70
Hemorrhage from the Vulva,	71
Cutaneous Diseases of the Vulva,	71
Tumors of the Vulva,	74
Malignant Tumors of the Labia and Vulva,	75
Vaginismus,	76
Coccygodynia,	76
Urethral Caruncle,	77
Urethrocele,	78
Urethral Stricture,	78
Prolapse,	78
Vulvovaginal Hyperesthesia,	79
ANATOMY OF THE VAGINA,	80
DISEASES OF THE VAGINA,	81
Atresia of the Vagina,	81
Hematocolpos,	82
Prolapse of the Vaginal Walls,	83
Inflammation of the Vagina,	95
Malignant Neoplasms of the Vagina,	99
Genital Fistulæ,	100
Fecal Fistula,	101
Urethrovaginal Fistulæ,	104
Vesico-uterine Fistula,	104
Rectovaginal Fistula,	104

	PAGE
ANATOMY OF THE UTERUS,	105
DISEASES OF THE UTERUS,	108
Deviations in Position,	108
Ascent of the Uterus,	111
Anterior, Posterior, and Lateral Displacements of the Uterus,	111
Anteflexion,	112
Anteversión,	116
Posterior Displacements,	122
Acquired Posterior Displacements,	124
Prolapse of the Uterus,	140
Inversion of the Uterus,	144
Deviations in Function,	151
Amenorrhea,	151
Menorrhagia and Metrorrhagia,	153
Dysmenorrhea,	154
Anomalies of the Uterus,	160
Atresia and Stenosis of the Cervical Canal,	161
Supra- and Infravaginal Hypertrophy of the Cervix,	163
Lacerations of the Cervix Uteri,	164
Endometritis,	170
Chronic Endometritis,	173
Metritis,	176
Chronic Metritis,	178
TUMORS OF THE UTERUS,	180
Fibroid Tumors,	180
Uterine Polypi,	193
Cancer of the Uterus,	194
Sarcoma of the Uterus,	200
ANATOMY OF THE OVIDUCTS,	207
DISEASES OF THE OVIDUCTS,	208
Salpingitis,	208
Tuberculosis of the Oviducts,	213
Pelvic Hematocele,	213
ANATOMY OF THE OVARY,	217
DISPLACEMENTS OF OVARIES AND TUBES,	219
DISEASES OF THE OVARY,	220
Congestion of the Ovaries,	220
Oophoritis,	221
Acute Oophoritis,	221
TUMORS OF THE OVARY,	225
Solid Tumors of the Ovary,	225
Cystic Tumors of the Ovary,	227
DISEASES OF THE PERITONEUM AND CELLULAR TISSUE,	246
Pelvic Peritonitis,	246
DISEASES OF THE BLADDER,	247
Hypospadias and Epispadias,	247
Irritability of the Bladder,	248
Cystitis,	248
INDEX,	255

LIST OF ILLUSTRATIONS.

FIG.	PAGE
1. Examination Chair,	27
2. Examination Table,	27
3. Dorsal Position,	29
4. Modified Dorsal Position,	29
5. Dorsosacral Position, showing Application of Leg-straps, . . .	29
6. Trendelenburg Position,	29
7. Left Lateral or Sims' Position,	29
8. Genupectoral Position,	29
9. Digital Examination—Touching the Cervix,	36
10. Diagram Showing Position of the Ureters,	37
11. Digital Eversion of the Rectum,	38
12. Bimanual Palpation of Uterus—Exploration of the Posterior Vaginal Vault,	40
13. Bimanual Palpation; Abdominorectal Method,	43
14. Simpson's Sound,	44
15. Sims' Sound,	44
16. Jenks' Sound,	44
17. Thomas' Sound,	44
18. Introduction of Sound,	45
19. Introduction of Sound through Speculum,	46
20. Fergusson's Speculum,	47
21. Sims' Speculum,	48
22. Higbee's Bivalve Speculum,	48
23. Trivalve Speculum,	49
24. Sims' Depressor,	50
25. Tenacula,	51
26. Volsella Forceps,	52
27. Uterine Dressing Forceps,	52
28. Applicator,	52
29. Uterine Syringe,	52
30. Slippery-elm Tent,	53
31. Hegar's Dilator,	54
32. Goodell's Parallel Dilator,	55
33. Barnes' Bag,	56
34. Wire-loop Curets,	57
35. Sharp Curet,	57
36. Dull-edged Douche Curet,	57
37. External Genitalia of Female,	59
38. Follicular Vulvitis,	66

FIG.	PAGE
39. Abscess of the Vulvovaginal Gland,	68
40. Elephantiasis of Vulva,	74
41. Urethral Caruncle,	77
42. Prolapse of Urethra,	79
43. Cystocele and Rectocele,	83
44. Stoltz's Operation,	85
45. Emmet's Operation, showing Area of Denudation,	86
46. Moderately Curved Scissors,	89
47. Tooth Forceps,	89
48. Emmet's Denudation Operation for Incomplete Laceration of Pelvic Floor and Perineum,	90
49. Emmet's Operation for Incomplete Laceration of Perineum. Closure of Skin Perineum,	90
50. Surface Denuded in Complete Perineal Rupture, and First Two Sutures for Uniting Torn Ends of Sphincter Ani in Position, . .	92
51. Flap-splitting Operation for Incomplete Laceration of the Peri- neum, Lines of Incision,	93
52. Flap-splitting Operation for Complete Laceration of the Peri- neum, Lines of Incision,	93
53. Flap-splitting Operation for Lacerated Perineum—Appearance of Wound and Introduction of Sutures,	94
54. Granular Vaginitis,	96
55. Gonococcus of Neisser,	98
56. Location of Various Forms of Fistulæ,	100
57. Operation for Vesicovaginal Fistula. Vivifying Edges of Fistula, .	101
58. Showing Beveling of Edges,	102
59. Course of the Needle,	103
60. Virgin Uterus,	106
61. Topography of Normal Female Pelvic Organs,	107
62. Pelvic Organs, showing Position of Uterus with Bladder Dis- tended,	109
63. Pelvic Organs, showing Position of Uterus with Rectum Dis- tended,	110
64. Antelexion,	111
65. Slight Deviation from Normal Position,	111
66. Retroflexion of Body,	111
67. Anteversion,	112
68. Retroversion,	112
69. Retroflexion,	112
70. Antelexion of the Uterus,	113
71. Reposition with Antelexion,	114
72. Degrees of Anteversion,	117
73. Douche Curet,	119
74. Thomas' Anteversion Pessary in Position,	119
75. Graily Hewitt's Anteversion Pessary,	121
76. Retroflexion,	123
77. Knee-chest Position, showing Reposition of the Uterus by Grav- ity and Pressure of Air in the Vagina,	129

FIG.	PAGE
78. Diagnosis and Reduction of Retroflexion by the Sound,	130
79. Topographic Anatomy of the Round Ligament,	131
80. Gastrohysteropexy, or Ventrofixation,	132
81. Method of Suturing the Uterus and Abdominal Wall After Hysterorrhaphy,	133
82. Mackenrodt's Operation,	134
83. Hodge Pessary,	136
84. Thomas Pessary,	136
85. Introduction of Pessary, First Stage,	137
86. Introduction of Pessary, Second Stage,	138
87. Introduction of Pessary, Third Stage,	139
88. Introduction of Pessary, Fourth Stage,	140
89. Braun's Colpeurynter,	143
90. Thomas-Cutter Pessary,	144
91. Three Degrees of Inversion,	145
92. Polypus,	147
93. Inversion,	147
94. Fibrous Polypus,	149
95. Partial Inversion,	149
96. Rapid Reduction by White's Method,	150
97. Crucial Incision of External Os for Dysmenorrhea,	157
98. Dysmenorrheal Membrane,	158
99. Müller's Ducts,	160
100. Coalescence of Ducts,	160
101. Disappearance of Septum,	160
102. Appearance of Fundus and Cervix,	160
103. Unilateral Laceration of the Cervix,	165
104. Bilateral Laceration of the Cervix with Eversion of the Cervical Mucous Membrane,	165
105. Stellate Laceration of the Cervix,	166
106. Emmet's Trachelorrhaphy, showing Area of Denudation in a Bilateral Laceration of the Cervix,	168
107. Same, showing Method of Inserting Stitches,	168
108. Sutures Tied,	168
109. Schroeder's Operation. Line of Excision in Excision of the Cervical Mucous Membrane, and Method of Inserting First Sutich,	169
110. Schroeder's Operation. Method of Drawing in Excised Ends of Cervix,	169
111. Subserous Fibroid,	181
112. Interstitial Fibroid,	181
113. Subserous and Submucous Fibroid,	182
114. Avulsion Forceps,	186
115. Arrangement of Operating Room,	187
116. Suture of the Abdominal Wall about the Pedicle,	190
117. Epithelioma Affecting Anterior Lip of Cervix,	195
118. Epithelioma Affecting Posterior Lip of Cervix,	196
119. Epithelioma Affecting Both Lips of Cervix, Vagina, and Bladder,	196

FIG.	PAGE
120. Vaginal Hysterectomy,	202
121. Vaginal Hysterectomy,	203
122. Vaginal Hysterectomy,	204
123. Normal Fallopian Tube,	207
124. Double Hydrosalpinx,	209
125. Large Hematosalpinx,	210
126. Pyosalpinx with Oophoritis and Universal Adhesions Masking the Ovary,	211
127. Intraperitoneal Hematocele,	213
128. Extraperitoneal Hematocele,	214
129. Fallopian Tube and Ovary, Seen from Behind,	218
130. Spindle-celled Sarcoma of the Ovary,	227
131. Ovarian Tumor Weighing 140 Pounds,	228
132. Microscopic Examination of Fluid from Ovarian Tumors,	229
133. Papillary Cystoma of Right Ovary,	230
134. Double Dermoid Cysts Removed During Pregnancy,	230
135. Showing the Area of Dullness,	236
136. Staffordshire Knot,	241
137. Triple Ammonium Magnesia Phosphates,	249
138. Kelly's Cystoscope,	253
139. Kelly's Calibrator, for Measuring Size of Urethra,	253
140. Kelly's Ureteral Catheter,	253

A COMPEND OF GYNECOLOGY.

ANTISEPSIS IN GYNECOLOGY.

All the rules of asepsis and antiseptics used in general surgery find an equally important place in gynecology, and a clear understanding of their definitions and of the strictest methods of their execution are absolutely necessary in the scientific practice of the same. By sepsis is usually understood an infective process, more or less general, resulting from the presence of pathogenic, generally pus-producing, micro-organisms, of which the species most commonly found are the staphylococcus pyogenes albus, staphylococcus pyogenes aureus, and streptococcus pyogenes. Other forms of organisms, such as the bacillus coli communis and the gonococcus, may play an important part in septic infection; the former is frequently met with in postoperation peritonitis following intestinal wounds; the latter is a frequent cause of vaginal catarrh, the infection extending often to the urethra, bladder, and even into the ureters and kidneys. While any of the foregoing forms of micro-organisms may exist in the genital tract, they are more apt to be found in certain locations: thus, the gonococcus of Neisser is most generally found in the cervix, the urethra, or the folds of membrane at the mouth of the latter; the staphylococcus pyogenes aureus and the streptococcus pyogenes are frequently met with in cultures taken from abscesses in and around the Fallopian tubes.

Asepsis is the absence of all septic pathogenic microorganisms.

Antisepsis is the destruction of all pathogenic microorganisms, either by mechanic or chemic means, by both combined, or by heat. The greatest efforts in all branches of surgery should be directed toward attaining the aseptic condition, which can be accomplished only by the absolute cleanliness of all concerned in the operation, as well as of the instruments used. On the part of the patient, all wounds not previously containing pus, or infected at the time of operation, can be kept aseptic. Given a clean wound, with a little care on the part of the surgeon it is much easier to keep out septic germs than to destroy them and their effects after they have once fairly made an entrance.

METHODS OF ASEPSIS AND ANTISEPSIS.

The general technic of the preparation for a gynecologic operation may be described as follows: First, the patient; second, the room; third, the operator and assistants; fourth, the instruments, etc.

The Patient.—For two or three days previous to the operation she should have at least two vaginal injections of one of the following: A solution of bichlorid of mercury, 1 : 2000, or of creolin or equal parts of creolin and tincture of green soap in a solution of 10 per cent. strength; or formalin, 1 : 1000 or 1 : 1500. In operations in and about the vulva or near the pubes the hair on the mons veneris should be shaved off. The field of operation must be thoroughly scrubbed with soap and warm water, a nail-brush being used; this followed by a washing with ether, and lastly with corrosive sublimate 1 : 1000.

Before abdominal operations the abdomen should next be covered with a good-sized pad of sterilized gauze, fastened by a broad binder. In operations in and about the vagina irrigations of solutions of creolin and green soap, or creolin of a strength of from five to ten per cent., are, as a general rule, preferable to bichlorid of mercury. Solution of formalin 1 : 1500 may also be used for vaginal irrigations. For disinfection of the skin, stronger solutions of formalin may be employed. During the injection a tampon or ball of absorbent cotton or gauze should be inserted by means of dressing forceps, and moved about in order that all folds

of the vaginal mucous membrane may be thoroughly stretched and cleaned. The vulva should be covered with a sterilized pad or napkin. Some hours before operation the patient should be given a purgative of aloes, gr. j; belladonna, gr. $\frac{1}{6}$; strychnin, gr. $\frac{1}{30}$ ("American Text-book of Gynecology"); or of calomel or magnesia sulphate. On the morning of the operation an enema should be given. When, as occasionally happens, the action of the purgative is delayed, and there is danger of the feces being evacuated over the operator's person, some authors recommend passing a suture twice through the anus. Immediately before operation the bladder should always be evacuated by means of a catheter. The field of operation should be separated from surrounding parts by sterilized towels or by three or four thicknesses of gauze. In vaginal operations it is recommended that a diaphragm composed of several thicknesses of gauze be laid over the vulva, inner surface of the thighs, and buttocks, reaching well down below the border of the table, and that the operation be done through a slit in the center of this. Where possible, it is well to prepare the patient's system for the operation some time in advance, by tonics, good nutrition, and easily digested food at frequent intervals, and the skin made active by baths and massage.

The Operating Room.—If in a hospital, the operating room should not be in immediate communication with the ordinary wards, where septic or infectious cases may be. The most important considerations are cleanliness and a good light. Where possible, the floor should be of stone, concrete, or closely joined boards treated with paraffin. The walls should be of stone, encaustic tiles, or enameled wood, so that walls, floor, and ceiling may easily be washed by a hose, which should be done before and after each operation. All shelving and furniture should be of metal, glass, or enameled wood. Hot and cold water should be constantly ready on tap. Some operators, however, prefer that stationary wash-stands and tubs should be in another room. A north light is considered the best. All operating rooms should be provided with large skylights and windows, but should not admit the direct rays of the sun. A side light is looked upon with favor by some authorities. All dressings, ligatures, sponges, etc., should be stored in glass jars. It is convenient to have the operating room connect with another room, in which the patient can be

anesthetized. If the operation is to be done in a private house, the preparations should be made two or three days in advance. All furniture and curtains should be taken out. If the walls can not be whitewashed with lime or washed down with an antiseptic solution, they should be covered with cloths wet with carbolic acid five per cent. or corrosive sublimate 1 : 500. A kitchen table and two chairs for the patient's feet will answer for an operating table, and where the Trendelenburg posture is required, a Krug frame can be conveniently fitted on the table. After being cleaned the room should be closed, and not again opened until the day of operation. Some authorities recommend that sulphur be burned in the room some hours before the operation begins, or formaldehyd may be used for the same purpose. The temperature of the room during the operation should be from 77° to 87° F. (25° to 30° C.). Pozzi recommends that the air of the room be kept moist by means of a carbolic spray from a steam atomizer, directed not on the area of operation, but toward the center of the room and upward. There should be a plentiful supply of distilled water in demijohns, or, this not being obtainable, boiling water will answer quite well.

The Operator and His Assistants.—It is of primary importance, in order to insure an aseptic condition of the patient, that neither the operator nor any of his assistants should have attended a postmortem, handled pathologic specimens, a septic wound, or a case of contagious disease for at least forty-eight hours before the operation. If, however, they have, a bath of bichlorid of mercury, with energetic rubbing, should be resorted to. The finger-nails should be prepared by cutting them close and covering them with soap or vaselin. The operator should be protected by a rubber apron to cover his clothing, and over this a long gown, belted at the waist, or a linen apron with sleeves which can be drawn down over the shirt-sleeves and tied. Some operators prefer a jacket made of butcher's linen, with trousers of the same material. A similar suit may be worn by the assistants. These suits are to be sterilized before each operation.

The hands of the gynecologist and of his assistants should be prepared as follows: (1) The hands and forearms being bared to the elbow, should first be thoroughly soaped, either with ordinary soap or with a preparation of soft soap and ether, and scrubbed with a

stiff nail-brush. Some operators prefer using a mixture of carbonate of soda, 2 parts, and chlorinated lime, 1 part, with enough water to make a lather. The hands and arms, and especially the finger-nails, are again thoroughly scrubbed and the lather washed off with sterile water. It is well to keep the nail-brush in a vessel containing a solution of carbolic acid, and covered from the air. (2) After thus washing the hands and arms, the soap must be entirely removed and the parts bathed in alcohol. (3) The hands and arms are then to be soaked for about five minutes in a solution of bichlorid of mercury 1 : 500 or 1 : 1000, after which they are washed in distilled water.

Another method of preparing the hands is as follows: After washing with soap and water, they are covered with a hot saturated solution of permanganate of potash until they are stained reddish-brown, after which they should be well washed with a saturated solution of oxalic acid until all the permanganate is removed. Milk of lime may be used to wash off the oxalic acid, though sterilized water will do. The latter method of sterilization is particularly recommended by Pozzi in suspicious or septic cases. In order to deodorize the hands after handling cancer, Foulis, of Edinburgh, recommends, in addition to antiseptics, the use of essence of turpentine. In operations in and around the vagina hot creolin solution makes a good antiseptic for the hands. The hands of all the direct assistants and nurses attending must be similarly prepared. Some recent authorities recommend that the hands be immersed in a saturated solution of paraffin and xylol after washing. In abdominal and other operations the hands of the surgeon and his first assistant are further protected by sterilized gloves made of seamless rubber dam, cotton, or silk.

Instruments.—The instruments should be simply constructed, preferably of one piece of metal, all ornamentations and mountings being avoided. If, of necessity, their parts are separable, they should be constructed so as to be easily taken apart and cleaned. Before using at an operation they are to be boiled for five minutes in a ten per cent. solution of carbonate of soda.* The soda

* Kelly recommends in his "Text-book of Gynecology," vol. I, p. 6, that the instruments be boiled in a solution of bicarbonate of soda, ten grams to

prevents rusting. In boiling, a sterilizer containing wire gauze trays will be found convenient, but if this is not at hand, the instruments may be placed in a linen bag and boiled in the ordinary Arnold sterilizer, or even in a clean boiler such as is used for domestic purposes. After the operation the instruments should be placed in hot water and washed with common soap and a scrubbing brush; they are then rinsed in hot water, rapidly dried, and placed in a dry towel. Occasionally it is well to rub them with the finest grade of sapolio, or with magnesia, afterward polishing them with very fine sand-soap. If the instruments have been used in a septic case of any sort, they should be sterilized before putting them away, this sterilization being effected either by boiling as before, or, as is recommended by Pozzi, placing them for half an hour in strong boiling carbolic solution or in a sterilizing oven at 140° C. for an hour. After sterilization, and immediately before the operation, the instruments should be sorted in the order of their use, and placed in pans containing boiling water or five per cent. carbolic solution.

Ligatures, Sutures, Dressings, etc.—The substances most generally used for ligatures and sutures are silk, catgut, and silk-worm gut. Silver wire is still to some extent used, but silk-worm gut has to a great extent replaced it. Animal tendon, particularly kangaroo tendon, is used by some operators, but, though good, is rather expensive for general use.

SILK should be of twisted Chinese, the most tenacious being the flat-plaited variety. It is generally in three sizes:

The finest, often used for threading in a loop, to draw sutures through the tissues; it is then called a "carrier."

Second size, or intermediate, used for ligatures and sutures.

Third size, or heavy, used for ligation in vaginal hysterectomy.

Preparation.—Silk should be prepared in small quantities, by winding or wrapping in a loose skein and boiling for an hour in carbolic solution 50 : 1000. It is then wrapped on glass plates, immersed in a fresh solution of carbolic, of the same strength as before, which is renewed every eight days (Pozzi). It may also be

the liter of water. This, he claims, not only prevents rust, but dissolves the germ capsule.

prepared by boiling for an hour or by placing for a number of hours in a solution of acid sublimate of mercury 1 : 1000, then placing in absolute alcohol for use (Montgomery). It may be loosely rolled on glass reels and placed inside pieces of glass tubing cut for the purpose. Both ends of the tubes are then closed with cotton and they are placed in a steam sterilizer for an hour the first day, the process being repeated for a half hour on the next two succeeding days. The silk should be cut in convenient lengths before placing in the tubes. Silk may also be prepared by immersing for twenty-four hours in an ethereal solution of iodoform (20 : 100).

SILK-WORM GUT is prepared in the same manner as silk. A convenient way of keeping it is in a glass tube of sufficient length to keep the strands straight. The tube is stoppered at both ends with corks after being filled with alcohol.

CATGUT is prepared as follows :

JUNIPERIZED CATGUT.—Immerse for an hour in an alcoholic solution of corrosive sublimate 1 : 1000; then plunge into juniper oil for at least eight hours; then take out and preserve in a solution one-tenth oil of juniper, nine-tenths alcohol. Before using, place in an alcoholic sublimate solution 1 : 1000 for a few minutes; this swells it and gives it greater pliability. It may be prepared by prolonged boiling in alcohol for a number of hours. David's apparatus, in which the vapor of alcohol is recondensed, is the most economic method of sterilizing in this way. It may be rolled on spools of glass, and should be kept in alcohol. It must not come in contact with water.

CHROMICIZED CATGUT.—Place in ether, allowing it to remain from twenty-four to forty-eight hours, to dissolve out fatty substances. Then place in a five per cent. solution of carbolic acid in which one grain to the ounce of bichromate of potash has been dissolved. Let it remain in this from twenty-four to forty-eight hours, according to size of catgut. It is then placed in absolute alcohol for use. Silver wire is preserved in alcohol after being sterilized at a temperature of 120° C.

Cumol Method of Preparing Catgut.—Cut the catgut in strands; then place in a glass tube and bring the sterilizer to a temperature of 80° C. (176° F.) for one hour. The strands are then placed in cumol at a temperature not above 100° C. (212° F.), and raised to 165° C.

(329° F.), at which point the temperature is maintained for one hour. The cumol is then poured off and the catgut in the tube dried in a hot-air oven for two hours at a temperature of 100° C. It is then transferred to sterilized tubes (Johns Hopkins method).

All cords and tubes such as are used for elastic ligatures and drainage-tubes should be left for ten minutes in boiling water, after which they are preserved in strong carbolic water or sublimate solution.

Method of Preparing Sponges.—Gauze compress sponges are to be preferred to marine sponges. Pozzi, following the method of Billroth, prefers them even in abdominal operations. Carefully prepared, they are also recommended by Professor Keen, of Philadelphia. Fold a piece of gauze into squares of twelve inches (thirty centimeters), composed of eight thicknesses, and cut; the squares must be coarsely stitched along the edges. They can be sterilized by boiling for two hours in a five per cent. carbolic solution, bichlorid of mercury, 1 : 1000, or by heat. They should be carefully packed in jars and protected from the air. Pozzi recommends that they be carefully washed in sterilized water and wrung out as dry as possible. They make a powerful absorbing agent. Of course, they are burned after being once used.

Preparation of Marine Sponges.—Pound the sponges in a wooden bowl to free them from sand and grit; afterward wash them in warm water several times until the water is clear. Soak for twenty-four hours in dilute muriatic acid, 3ij to Oj, to remove all particles of chalk. Pass quickly through five per cent. solution of permanganate of potash, which stains them a dark purple. Decolorize by immersing in a saturated solution of oxalic acid. Before the sterilization of sponges the hands should be disinfected in the same manner as for operation. The acid solution is neutralized by immersing them in a sterilized lime solution, after which they are placed for twelve hours in a sublimate solution, 1 : 1000. They are then stored away in a three per cent. carbolic acid solution, after rinsing twice in sterilized water. They must be kept in air-tight glass jars.

A second method of preparation is by immersing the sponges in a saturated solution of carbonate of soda for forty-eight hours, after washing free from the hydrochloric acid. The soda is then

thoroughly washed from them and they are placed in alcohol until used. After being once used they may be prepared for further use by passing through a saturated solution of soda, afterward placing them for twelve hours in a solution of sulphurous acid, strong enough to be sour to the taste. Preserve in alcohol.

GAUZE is cut in strips from the original rolls and sterilized by steam or dry heat, or may be prepared with bichlorid of mercury. Most operators reject the latter for abdominal operations.

ABSORBENT COTTON.—Make into balls, cover with a clean towel, and sterilize in a glass jar for about an hour. Steam or dry heat may be used.

DRAINAGE may be accomplished by tubes of glass or rubber, or by gauze. The first and last, however, are most generally used. Glass tubes are generally perforated along the side from without inward, so as to permit free access of fluid. When tubes are used, great care must be exercised in keeping them clean, which is done by means of a long-nozzled syringe, passing it to the bottom of the tube and sucking out the accumulated fluids. This at first should be done every fifteen minutes, and the time gradually lengthened to three or four times a day. The tube is generally removed in from twenty-four to thirty-six hours.

All surrounding parts must be carefully sterilized with bichlorid solution at each pumping of the tube, and the hands of the surgeon must be strictly clean.

These tubes permit drainage, but do not primarily cause it. Gauze drainage acts by capillary attraction, and is therefore a true drainage. It may be used in the form of the gauze bag invented by Mikulicz, consisting of a bag eight or nine inches long and about two inches in diameter, a string being carried to the bottom. The bag is loosely filled with gauze in strips. When it is necessary to remove, the strips are drawn out with sterilized forceps and the bag inverted by pulling on the string. The incision is then closed by sutures. The other method of gauze drainage is by loosely rolling a strip one yard long and about three-fourths of an inch wide. A large pad of sterilized gauze must always cover the drain.

Drainage may also be aided by postural methods, as advised by

Clark. This method is useful after abdominal operations during which contamination of the peritoneum may have occurred. From 500 to 1000 c.c. of a normal saline solution are left in the peritoneal cavity after the operation. The patient is placed for twenty-four hours in a bed the foot of which is elevated eighteen inches. "This serves to dilute and promote the rapid absorption of all noxious material by calling into play the diaphragmatic lymph-spaces" (Kelly).

GYNECOLOGIC EXAMINATION.

Methods of Obtaining a History.—It is well, in obtaining the history of a patient, to allow her first to tell the story of her complaint in her own words, as long as she confines herself to this subject. A gynecologist should never, in examining a patient, have a preconceived idea of the diagnosis of her case. It is well, however, after satisfying himself that her symptoms point to a certain cause, to put to her a systematic series of questions, and the answers to these questions should be recorded in a book for future reference and study, or for publication. After taking her name, address, and age, with the date on which she first calls, the examiner should determine somewhat as follows: Is the patient married or single; has she ever been pregnant; the number of miscarriages and of children born at full term; the ages of the oldest and youngest child? If any miscarriages, at what period of pregnancy did they occur; were they after or before the birth of the last child; were her labors normal; were instruments or any form of obstetric operation required, and, if so, what was the cause of the dystocia? From what does she think her present ailment arises? Her family history? Is there any inherited disease or tendency to disease? Regarding the patient's sexual life, the examiner should inquire the age at which menstruation first appeared; its regularity, quantity, duration, and character. If irregular or absent, the dates of the beginning and cessation should be inquired into. Should any pain or other symptom appear with menstruation, the seat, character, and time of appearance should be determined. All vaginal discharges should be investigated. Vaginal leukorrhea is usually thin and watery; and

when the discharge is cervical or uterine in origin, it is apt to be thick and tenacious and decidedly whitish in color. A thin, watery discharge containing shreds of tissue reddish in color and having a peculiar sickly odor of decomposition points to malignant disease. The general health should be inquired into. Many patients having pelvic trouble have nearly constant headache. The condition of the bowels, digestion, lungs, and circulation should receive attention. In many cases it is well to make a careful qualitative and quantitative examination of the urine.

Preparation for an Examination.—Before examination it is well that the patient should have had a mild laxative, followed by an enema of soap and water; the bladder should be empty. When the examination is to take place at the patient's house, a

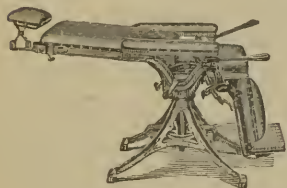


FIG. 1.—EXAMINATION CHAIR.

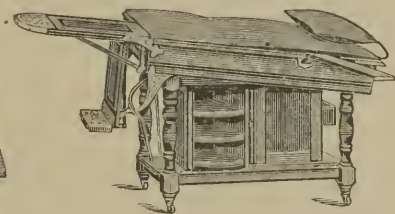


FIG. 2.—EXAMINATION TABLE.

sofa without arms may be used for an examination table; chairs should be placed for the patient's feet to rest on. When the examination must be made on a bed, the patient should be placed crosswise, and a board, such as is used for ironing, should be placed beneath the sheet, crosswise on the bed, and the patient laid on it. This will prevent the hips from sinking in the mattress. The feet may rest on two chairs. A common kitchen table covered by two thicknesses of blanket, and with two chairs for the feet, makes a good examination table. At the physician's office, one of the many gynecologic tables in use should be at hand. This table should be provided with appliances for allowing the elevation and depression of the shoulders and movable stirrups for the feet. The examination should be made in a good light (north preferred). It is well to have between the table and win-

dow, and at the right hand of the operator as he sits facing the table, a stand or cabinet containing the appliances, etc., which he will need. Hot and cold water should be near at hand.

POSITION OF THE PATIENT.

It is necessary in the examination of a patient that the various gynecologic positions and their uses should be well understood.

Dorsal Position.—This is the one most generally used for ordinary gynecologic examinations. The patient lies supine on a flat surface, with head and shoulders slightly raised, the sacrum and soles of the feet being on the same level. The thighs are flexed on the abdomen and the feet supported either on chairs or by the foot-rest on the table, and separated enough to allow the physician to work between. Many applications can be made to the vagina and uterus with the patient in this position.

Modified Dorsal or Lithotomy Position.—The buttocks are brought to the edge of the bed or table and the trunk and head moderately elevated, the thighs being flexed on the pelvis and the legs on the thighs. The legs are held in this position by the use of an apparatus or by assistants. This position is of use in complete examinations, as the abdominal walls are relaxed and an easy introduction of the fingers and speculum permitted.

Dorsosacral Position.—In this the patient is placed on her back at the edge of a bed or table, the head slightly elevated, the pelvis raised and flexed on the vertebral column in such a way as to present marked obliquity from above downward and from before backward (Pozzi). The legs are flexed and carried to the abdomen, being held in place by an apparatus or assistants. If the latter, the legs should be held so that the assistant has one hand free to help the operator. The elevation of the pelvis causes the intestines to fall toward the diaphragm, intrapelvic pressure is lessened, and the detection of small tumors of the appendages is made easier.

Trendelenburg Position.—In order to place a patient in this position, she should lie on a table so arranged that the lower half can be considerably raised, or the lower limbs and pelvis may be elevated on the apparatus designed by Krug, which can



FIG. 3.—DORSAL POSITION.



FIG. 4.—MODIFIED DORSAL POSITION.



FIG. 5.—DORSOSACRAL POSITION, SHOWING APPLICATION OF LEG-STRAPS.

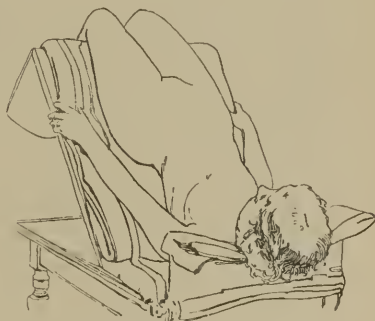


FIG. 6.—TRENDELENBURG POSITION.



FIG. 7.—LEFT LATERAL OR SIMS' POSITION.

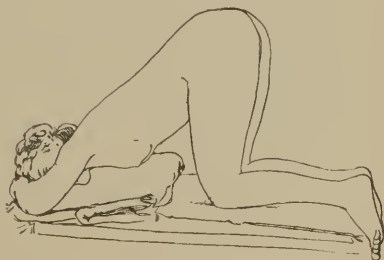


FIG. 8.—GENUPECTORAL POSITION.

be attached to any table. It is considered by many the best position for operations upon the pelvic organs, as the intestines are made to recede from the pelvic cavity, thereby leaving the latter clear for inspection through the incision.

The upright position is seldom used. Its only advantage is that the examiner can determine the position of the various pelvic organs as they are when the patient is about her daily work. To employ it the patient should lean against some support with the feet separated, while the physician leans on one knee in front of her. The elbow of the hand used in the examination can rest on the horizontal knee.

Left Lateral or Sims' Position.—The patient lies on her left side, her head supported on a low pillow and turned on the left cheek. The hips should be at the left-hand corner of the table. The knees are drawn up toward the chest as far as possible, the right one being drawn somewhat further than the left and forward until the foot touches the table. The left arm is drawn behind the body. The foot of the table should be somewhat higher than the head. This position is particularly adapted for the use of the Sims speculum, and for the inspection of the vagina and cervix. It is also very favorable for tamponment of the vagina and operations on its anterior wall, as well as upon the cervix.

Genupectoral Position.—The patient is placed on all fours, the trunk and head depressed as much as possible, so as to bring the chest close to the table. The head should be turned sidewise on a low pillow, and the back bowed downward, the nates projecting somewhat over the edge of the table. When air is admitted to the vagina, the uterus sinks away from the vaginal entrance and becomes more anteflexed. This position is used in the replacement of the retroverted uterus, or for tamponment of the vagina, and occasionally in the replacement of a prolapsed uterus or appendages.

GYNECOLOGIC DIAGNOSIS.

In considering the question of gynecologic diagnosis, it is convenient to divide the subject into non-instrumental and instrumental methods.

In the first class we have inspection, percussion, and auscultation, palpation of the uterus, vaginal and rectal touch or indigation, and the combined or bimanual method. In the second class, instrumental examinations of the vagina, cervix, uterus, rectum, and bladder. In almost all cases this latter class is used only as an aid to the first.

Inspection.—This is best practised with the patient in the dorsal position, the abdomen and other parts to be examined being exposed. All other parts of the body should be covered by a sheet.

Note any deformities in the external development of the pelvis or skeleton generally; any prominence of the abdominal veins; deposits of pigment; condition of the sebaceous glands or striæ. If the abdomen is enlarged, note whether such enlargement is circumscribed or general, whether it exists on one or both sides. The form, color, and shape of the umbilicus and linea alba should attract attention. If any movements are seen on the surface of the abdomen, they should be investigated carefully by all the diagnostic means at our command.

The presence or absence of abdominal respiration should be noticed. In this branch of diagnosis we may well include the general inspection of the face and body, such as the ordinary physician would make. Many valuable hints as to the patient's history, habits, deformities, etc., may be obtained in this way.

In the inspection of the external genital organs the patient should be in the dorsal or lithotomy position, a sheet being drawn around the lower limbs, the body well covered, and the parts to be examined exposed. The examiner should notice the condition of the external labia and mons veneris, any eruptions, tumors, or cysts that may be present; should see whether the greater lips approximate closely or if they gape apart, their color, and the condition of their external circulation. Notice at the same time if there are hemorrhoids at the anal opening, the condition of the perineum,

the presence or absence of rectocele. Anteriorly, notice the size of the clitoris, the presence of cystocele; whether eruptions, chancre, chancroids, or mucous patches are present; any increase in the size of the vulvovaginal glands, the general condition of the vaginal mucous membrane, and the character of any discharge which may be present.

The ordinary vaginal secretion is thin, of acid reaction, and scanty in amount; but when a greenish or yellowish secretion is present, and particularly if the quantity is increased about the urethral orifice and is accompanied by some inflammation, it denotes the presence of gonorrhea. In all inflammatory conditions the vaginal mucous membrane changes from a pinkish hue to varying shades of darker red. In pregnancy it is apt to be bluish in color.

Mensuration.—This method is seldom called into play, but may be useful in ascertaining the growth of tumors during given periods. It is also sometimes used in estimating deformities, and in diagnosing the death of a fetus in utero.

The patient should lie in the dorsal position, covered by one thin garment. Any carefully made measure will do, but a metal band graduated in inches and centimeters is the best.

Pelvimetry.—Measuring the diameter of the pelvis, and especially the diagonal conjugate, may be of use in gynecology as well as in obstetrics. This means of diagnosis may be practised by the pelvimeter and by the various internal methods which are used on the pregnant woman. For the description of these the student is referred to works on obstetrics.

PERCUSSION AND AUSCULTATION.

Percussion.—The patient should lie on her back on a moderately hard surface, with the lower limbs somewhat drawn up. The clothing should be loosened and the abdomen or part to be examined covered only by one thickness of unstarched linen or thin muslin. A clean towel may be used. Percussion is practised here in the same manner as in other parts of the body, the stroke always being from the wrist. The hand or pleximeter may be used. When the presence of fluid is suspected, it is well to practise percussion in several positions.

Auscultation.—This is a diagnostic means of great importance, and should always be practised on every case of abdominal enlargement. The patient should lie in the same position as for percussion, but with the limbs straight. The abdomen should be covered only by a soft sheet. It is well to place the ear on the abdomen and auscult methodically the various abdominal segments. After doing this carefully, the individual sounds heard may be isolated and more minutely examined by means of a stethoscope. After some practice, the sounds denoting pathologic change can be easily distinguished from those heard under normal conditions.

Palpation.—The patient is placed in the dorsal position with knees slightly flexed; the bladder and rectum should be empty; she should be asked to breathe with her mouth open. The examiner's hands should not be cold, and it is well to dip them in water as hot as can be borne, which both warms them and increases their sensitiveness; cold hands are apt to excite muscular contractions. The examination should be conducted gradually, as by thus doing the abdomen is accustomed to the manipulations. Massage will sometimes cause an oversensitive abdomen to relax. It is well to follow a systematic course, palpating first the hypogastric, then the iliac fossa, to determine changes in the volume or positions of the various pelvic organs.

After thoroughly examining these, the flanks, epigastrium, and hypochondriac regions should be palpated in turn. While practising palpation of the abdomen, the following details must be sought and taken account of, wherever any variation from the typical consistence occurs: Age; multiparity—the abdominal walls being much more flaccid in those who have borne many children; distention of the intestines by gas.

An anesthetic will greatly aid in the accuracy of the practice of palpation, and should always be administered to nervous patients. It is of especial importance in the differential diagnosis of abdominal tumors. Palpation of the ovaries and tubes without an anesthetic can only exceptionally be done. Meteorism may simulate a tumor or even pregnancy, but the condition of rectum, the peculiar doughy consistence of fecal material, and the fact that meteorism is usually found in the region of the cecum and sigmoid flexure

will aid in the differentiation. The distended bladder may be mistaken for a cyst, hence the necessity for catheterization in all cases before an examination. In rare instances the vesical distention may be due to compression upon the urethra or may result from an affection of the nervous system. A pelvic tumor pressing on the center of the bladder may cause it to become bilobed. The recti muscles may give the sensation of a tumor; this is especially the case when separation at the linea alba occurs. These muscles may also contract partially between two aponeurotic intersections, thus aiding the resemblance to a tumor. Masses of fatty tissue, especially in the region of the flanks, may simulate a tumor; thus, Pozzi states that he has observed masses of fat frequently in the hypogastrium of women affected with chronic disease of the genital organs and in dyspeptics.

Indigation.—For this procedure the dorsal position is the one generally recommended, the patient lying on a hard, firm surface. The vagina should be irrigated thoroughly with an antiseptic fluid both before and after the examination. The patient being ready, the physician, sitting beside her, should pass one hand, with index finger extended, the thumb extended upward and the other fingers semiflexed, under the sheet along the inside of the thigh until the dorsal surfaces of the fingers touch the perineum or vulva. In the examination it is best to use only the index finger, although this may be reinforced by the one next to it. The thumb should remain extended, and is placed obliquely toward the one or the other genitocrural fold, and never in the median line. The remaining fingers are used to depress the perineum. As a rule, ocular examination and external manipulation of the part should be left until after the internal examination has been made, exception to this, however, being cases in which great deviation from the normal has taken place. During the internal examination the finger should note all abnormalities in the greater and lesser labia, such as increase or decrease in size, erosions, eruptions, tumors, ulcers or mucous patches, cicatrices of previous labors or of preexisting disease. Laceration of the fourchet and obliterated carunculæ myrtiformes usually point to a previous pregnancy and delivery near or quite at term. The hymen in virgins usually exists as a crescentic fold of mucous membrane extending

across the posterior wall of the vagina at its entrance. Although it is apt to be an obstruction to examination, it is distensible, and, with caution, need not be ruptured, chloroform or cocain being used where the membrane is very sensitive. An unbroken hymen, clearly defined, usually points to virginity. It is generally ruptured during the first sexual intercourse, though in rather rare instances it has been preserved until the birth of a child. The hymen occasionally forms an obstacle to the excretion of menstrual fluid. Gentle pressure should now be made on the anterior vaginal wall with the examining finger turned palmar side upward, in order to determine if any abnormal condition of the urethra or bladder exists. The urethra is sometimes used for coition, in which case it is apt to become gradually dilated. It is in and around the mouth of the urethra that the peculiar yellow or greenish-yellow pus of gonorrhea is seen. Prolapse of the urethra is marked by a small but complete ring or collar extending around its orifice.

All the parts of the vaginal entrance having been examined, the finger should follow the posterior or lateral wall of the vagina, the objective point being the cervix, which is generally from two to three inches from the pelvic arch, and lying normally in a line forming a somewhat acute angle with the course taken by the finger. The finger should now be swept around to determine the condition of the vaginal walls, and any disease or abnormalities noted. In proceeding with the examination of the vaginal canal, a few points of diagnosis should be borne in mind. Ordinarily, in health the vaginal walls are in contact, but in those who have very recently borne children or are suffering from prolapse of the vaginal walls, the orifice will be found to gape.

The mucous membrane in health is smooth, marked regularly by transverse ridges or rugæ, and covered with a slight secretion, thin in character. When the mucous membrane is eroded, great tenderness exists, or, particularly when accompanied by an irritating discharge, it points to rapidly succeeding pregnancies, masturbation, or some form of vaginitis. A rough, granular feel of the mucous membrane denotes granular vaginitis. Other pathologic conditions, such as cicatricial contraction, may easily be made out. Feces in the rectum can be diagnosticated by its

peculiar doughy, non-elastic feel. Ascending higher, the fornices should be examined. It is not uncommon to find one lateral fornix narrower than the other, so that by pressing upward laterally the distance of the pelvic wall will be found to be less on that side, thus rendering lateral displacements more easily detected. Gentle pressure should be made also in front and behind, as well as on each side of the cervix, and in so doing it should be borne in mind that a solid body felt in front of the cervix is generally found to be the fundus of the uterus in a state of anterior displacement, or a fibroma, though other tumors are occasionally found in this location.

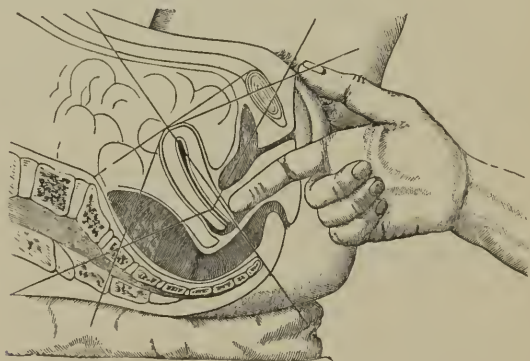


FIG. 9.—DIGITAL EXAMINATION—TOUCHING THE CERVIX.

The same globular tumor in the posterior fornix or Douglas' culdesac is most commonly the fundus of the uterus retrodisplaced. It may, however, be any of the various forms of tumors which find their way into this, the most dependent part of the pelvic cavity. It is necessary to ascertain by the finger the mobility of the uterus.

When the body of the uterus can not be freely moved forward or laterally, it shows that adhesions have taken place from an old peritoneal exudation, thus binding the uterus posteriorly. Such adhesions give some, but not a great amount of, pain on examination. By exercising pressure posteriorly and laterally, an enlarged

and prolapsed ovary may be caught and pressed against the pelvic walls. This should be done carefully, or otherwise, considerable pain may be caused the patient. It is sometimes recommended that the right hand be used in palpating the right side of the pelvis and the left hand for the left side.

Vaginal Palpation of the Ureters.—This is not a matter of great difficulty. The patient should be in the dorsal position. The ureters are situated on the dividing-line between the soft, elastic connective tissue of the parametrium and the firmer per-

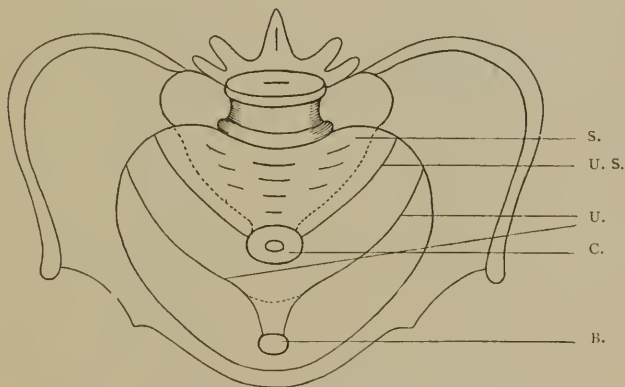


FIG. 10.—DIAGRAM SHOWING POSITION OF THE URETERS.

S. Sacrum. U. S. Uterosacral ligament. U. Ureters. C. Cervix. B. Neck of bladder.

ipheral fatty connective tissue, at the anterior lateral portion of the pelvis. (See Fig. 10.)

The end of the examining finger should be pressed upward anterior to the cervix, and drawn toward the pubes. The posterior edge or base of the trigone of the bladder will be felt about half an inch in front of the cervix, after which can be felt the firmer part of the anterior vaginal wall under the trigone. By repeating this manœuvre, going a little more to one or the other side each time, the same cord-like edge of the ureter can be traced laterally and backward toward the sacro-iliac joint. During the early

months of pregnancy, or when the ureters are diseased, they appear as cords.

Digital Eversion of the Rectum.—Two fingers should be placed in the posterior and lower part of the vagina and hooked, first backward toward the coccyx, then strongly outward toward the anus. By this means the rectal wall may be everted and examined. It is useful to have the thumb and fingers of the other

hand push backward the tissue behind the anus. This will increase the anal distention. This operation is somewhat painful, and it is generally well to administer an anesthetic.

Digital Examination by the Rectum.

—This is indicated in virgins, particularly those with sensitive hymen, or those in whom the vagina is narrowed. It is of great value in determining conditions existing in the culdesac of Douglas and the nature of tumors on the posterior wall of the uterus.

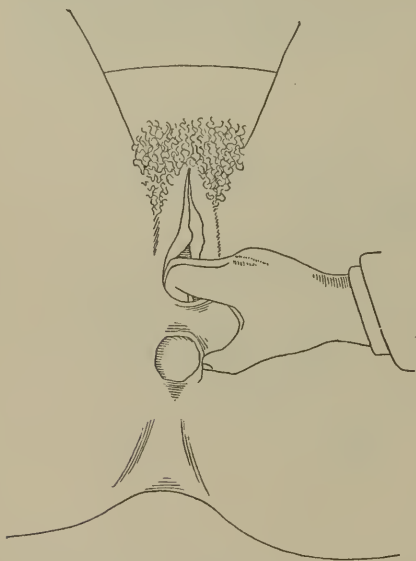


FIG. 11.—DIGITAL EVERSION OF THE RECTUM.

In performing rectal examination the forefinger should be smeared with vaselin or other non-irritating unctuous substance, and introduced through the anus in a forward direction, the palmar side being down. After the finger-end has passed beyond the edge of the levator ani it may be flexed a little and slowly swept around until its anterior or palmar surface is made to feel the anterior rectal wall. As the finger passes the coccyx it is well to palpate it between the finger internally and the thumb externally, as in this way fracture or other abnormal conditions can be made

out. As the finger rotates anteriorly the cervix can be easily felt, and if retroflexion or retroversion has taken place, the fundus can be distinctly outlined. Various pathologic conditions of Douglas' culdesac or the posterior uterine wall can be better felt than by the vagina. Rectal examination by introduction of the whole hand is not to be recommended. When it is necessary to reach the higher parts of the pelvis, the finger is moved along the sacral border until it passes through the constricted part of the rectum and behind the uterus, and between and over the uterosacral ligaments.

Bimanual or Combined Method of Examination.—The patient occupies the dorsal or lithotomy position. With the index finger of the right hand, either alone or in company with the second finger, practise vaginal examination, while the left hand presses steadily and gently upon the abdominal wall. Advantage should be taken of each inspiration to press further downward until the uterus can be palpated between the two hands. The uses of the bimanual method are to determine the position of the uterus and its relation to surrounding organs, the existence of malpositions, adhesions, etc.; the exploration of the broad ligaments, and in some cases to replace the uterus when it is out of its normal position. It is well to conduct an examination somewhat after the following method. Observe the uterus, as to mobility, position, size, shape, sensitiveness, and neoplasms:

The uterus in a normal state is freely movable. Excessive mobility indicates a probable state of relaxation of the uterine ligaments. Decreased mobility is usually combined with a feeling of resistance, the uterus being fixed often posteriorly or to one side. The condition indicates an old inflammatory thickening of the tissues surrounding the uterus, binding it down. It very frequently indicates that the patient has had septic infection following labor.

Position.—Unless some pressure is exercised through the abdominal wall, the body of the uterus in normal position can not be felt in any of the four fornices of the vagina, but with an empty bladder, during bimanual examination, the fundus may be included between the two hands in the anterior fornix. When the body of the uterus can easily be felt through both lateral fornices,

is distinctly globular or "jug-shaped," we may infer a probable early pregnancy.

Antedisplacement.—The tumor in the anterior culdesac can be distinctly outlined. This tumor will, by the bimanual method, be found to be continuous with the cervix, which can be felt by the vaginal examination. The diagnosis can be aided by the use of a clean sound.

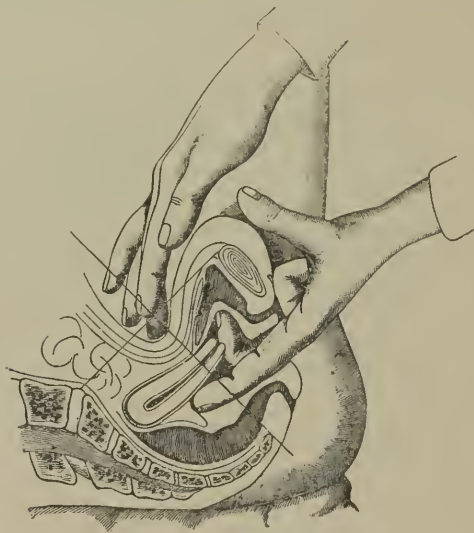


FIG. 12.—BIMANUAL PALPATION OF UTERUS—EXPLORATION OF THE POSTERIOR VAGINAL VAULT.

Retrodisplacement.—A solid body which is continuous with the cervix is felt in the posterior vaginal fornix. The cervix is nearly or quite in the axis of the vagina, and the pulp of the index finger of the vaginal hand attempts to enter the external os uteri. The fundus can not be pressed into the anterior culdesac.

Inversion.—The vaginal finger detects a bulbous tumor surrounded by a tense ring or collar, the latter being the dilated cervix. The external hand feels a funnel-shaped depression where the fundus ought to be.

Size of the Uterus.—Normally, the unimpregnated uterus is from three to three and a half inches in length. Enlargement would lead the examiner to suspect pregnancy or some of the diseases of the uterine body, to be considered under Diseases of the Uterus. Decrease in size would probably be caused by senile atrophy or congenital lack of development. In either of these cases other symptoms, considered under the proper heads, would accompany the condition.

Shape.—The uterus in health and unimpregnated is the shape of a pear flattened considerably in its anteroposterior diameter. In early pregnancy the body assumes a more globular shape and can be felt above the pubic bone at about the third month of gestation. The body can be palpated through the lateral fornices of the vagina at a somewhat earlier date. Irregularities in the shape of the uterus, felt especially through the abdominal wall, are probably due to fibroids, malformation, or to ectopic pregnancy.

Sensitiveness.—In the normal state pressure over the abdominal wall, carefully done, should give practically no pain. When, however, tenderness is present, it may be due to a hyperesthetic condition of the abdominal wall itself, as in hysteric subjects; or to rheumatism of the abdominal muscles, or to peritonitis. Tenderness may also be present in the uterus itself, or in the peritoneum immediately over it (perimetritis), and in these instances it usually points to acute inflammation of that organ (metritis). Sensitiveness at the *side* of the uterus, not very marked, combined with increased resistance on pressure, the internal finger not feeling a tumor in the posterior culdesac, is apt to be a symptom of a recent inflammation of the connective tissue about the cervix and vagina (pârametritis). The vaginal fornices or culdesacs should normally be smooth, soft, and elastic. A tumor in the *anterior culdesac* is usually the uterine fundus in a state of anteversion or flexion. It may, however, be a fibroid of the anterior wall, very rarely an effusion of blood or inflammatory exudate. In the lateral vaults no tumor is ever felt in health. Tumors in this position mark inflammatory deposits or neoplasms on the lateral walls of the uterus, a blood-tumor, or frequently, when a hard, cord-like feeling is present, it is an enlarged Fallopian tube. An ovary may rarely prolapse in this locality, or very rarely the uterus becomes lateroflexed.

.

The posterior vault is the most common seat of pelvic tumors. A retrodisplaced fundus uteri will be found here; fibroids on the posterior uterine wall, to be distinguished by their irregular outline; inflammatory deposits; hematocele; ovarian cysts in the earlier stages; a misplaced ovary, distinguished by its smooth, slippery feeling and great sensitiveness, and feces in the rectum.

Ovaries and Fallopian Tubes.—These may be recognized by keeping in contact the internal and external hands and gradually pressing downward, keeping as near the uterus as possible and following it from the fundus toward the cervix. By repeating this manœuvre, going somewhat further to the side each time, the ovarian ligament will give a cord-like sensation between the two hands. By following this cord slightly further from the uterus, the ovary may be felt as an enlargement, or like a small testicle.

The Fallopian tubes normally give no distinct sensation, but when enlarged, or when their lumen is occluded, they may become somewhat twisted backward over the ovary. In this condition they form a club-shaped tumor, which gradually becomes smaller as it passes toward the uterus.

The ureters are less tense to the touch than the ovarian ligament. It is possible to follow them to the sides of the pelvis.

The round ligaments can be but indistinctly felt as loose cords.

Abdominorectal Examination.—This method in many cases is necessary to complete a thorough examination of the uterus and its appendages. To apply this method, the bowels must recently have been thoroughly evacuated. The examining finger of the hand used for rectal examination should be well covered with soap or vaselin.

1st. Insert one or two fingers into the rectum, at the same time making pressure with the other hand applied over the abdomen or with two fingers in the vagina, endeavoring to include the uterus between the two hands.

2d. With a finger in the rectum and thumb in the vagina, grasp the cervix; at the same time the thumb and fingers of the other hand seize the fundus through the abdominal wall. By this means the movability, relations, size, etc., of the uterus can quite easily be made out. It is also possible to replace the uterus in this way. It is often useful to repeat bimanual examination with the patient in the lateral position.

The Sound.—The two sounds in most general use are those of Simpson and Sims. Thomas' whalebone or hard-rubber probe and Jenks' special sound, while being useful, are too elastic to retain the curve of the uterine canal, and are rarely used.

Simpson's sound is thirty centimeters ($11\frac{3}{4}$ inches) long, is composed of a rod of copper, silver- or nickel-plated, and slightly tapering. At the smaller end is a small knob to prevent perfor-

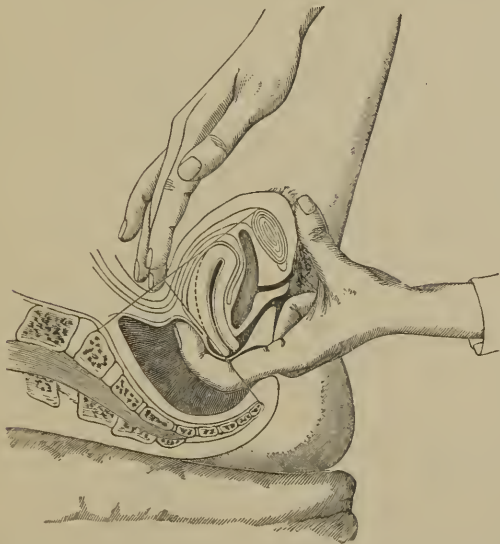


FIG. 13.—BIMANUAL PALPATION; ABDOMINORECTAL METHOD.

ating the uterus, while the larger end expands to form a handle. At a distance of seven centimeters ($2\frac{1}{2}$ inches) from the small end a second knob is placed, showing the length of the normal uterine cavity. This sound is now made so as to be easily bent with the fingers. One side of the handle is usually roughened, the sound being bent so that the roughened side will look toward the concavity, thus indicating the position of the point in the uterine canal.

Sims' sound is constructed on the principle of the foregoing, but is lighter and more flexible.



FIG. 14.—SIMPSON'S SOUND.



FIG. 15.—SIMS' SOUND.

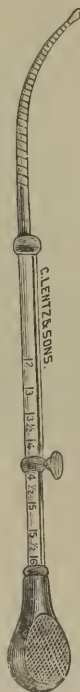


FIG. 16.—JENKS' SOUND.



FIG. 17.—THOMAS' SOUND.

Uses of the Sound.

1. To show the capacity of the uterus.

2. Presence or absence of new growths within the uterus.
3. Deviations in the course of the canal.
4. Diagnosis of displacement.
5. Mobility of the uterus.

Dangers.—1. Porfuration of the uterine body. This, however, is slight if no force has been used.

2. The introduction of septic material within the uterus and a subsequent attack of—

3. Pelvic peritonitis or even general peritonitis.

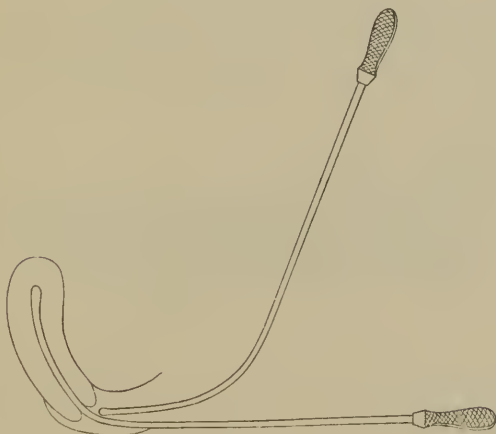


FIG. 18.—INTRODUCTION OF SOUND.

4. Where malignant disease is present, hemorrhage may be induced.

5. Abortion.

Contraindications.—The sound should never be employed:

1. If the patient has missed one menstrual period by but even a few days.
2. During an acute attack of endometritis.
3. In malignant disease of vagina or uterus.
4. During menstruation.

Preparation for Examination by a Sound.—When possible, it is

best to use the sound through a speculum, and when this is done, the vaginal culdesacs and cervix should be washed with a five per cent. carbolic or creolin solution and well dried. When no speculum is used, the vagina should be irrigated with a 1 : 2000 solution of bichlorid of mercury. The sound should be well boiled and soaked in five per cent. carbolic acid solution just before its introduction.

Method of Introducing.—The patient is usually placed in the dorsal position.

1st. Locate the cervix with the index finger.

2d. Starting at the second bulb,—*i. e.*, seven cm. from the point,—bend the sound to a curve of about forty-five degrees.

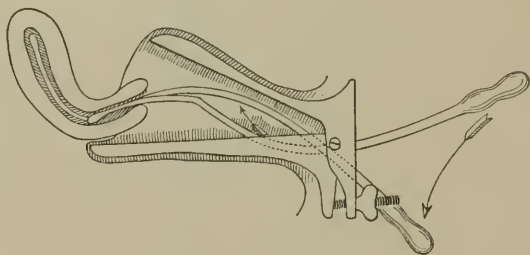


FIG. 19.—INTRODUCTION OF SOUND THROUGH SPECULUM.

3d. Introduce the sound in the vagina and pass along the palmar side of the index finger, which should guide it into the cervical canal. Occasionally, where the fundus is in anteposition, the introduction is made easier by starting the sound into the cervical canal with its concavity backward; then, when the point has entered, make the handle describe a semicircle from behind, to the left, and forward.

4th. Depress the handle, drawing the cervix somewhat forward with the finger, the sound, or a tenaculum.

5th. Use no force. It may be necessary to change the curve of the sound several times.

6th. Sometimes, by giving the sound a sharper curve, with a

counter-curve near the handle, it is enabled to pass an acute flexion in the uterine body.

7th. If much pain is caused, from acute flexion or spasmodic contraction, causing a narrowing of the internal os, withdraw the sound until an examination has been made by the speculum.

8th. When the fundus is posterior, it is usual to introduce the sound with the concavity backward, but the introduction may be facilitated by entering the instrument with the concavity forward, and causing the handle to describe a semicircle from before backward.

Although by the use of the sound valuable information may be obtained, the dangers attending its use are so considerable that it need be but exceptionally employed. Other means of diagnosis which we have at our command in nearly all cases will amply supply its place.



FIG. 20.—FERGUSSON'S SPECULUM.

Specula.—Specula are divided into cylindric and valvular. The best representative of the first class was invented by Fergusson, of London. It consists of a glass tube with a bell-shaped external extremity, the end for insertion into the vagina being beveled. The internal surface of the tube is more or less of a mirror to reflect light, while the external surface is coated with rubber and varnished. This form of speculum is not used so much as formerly, but may be useful for topical applications to the cervix or to aid in the retention of leeches. Tubular or cylindric specula should come in sets of at least three sizes, and should vary in diameter from one to two and one-half inches. In inserting, the longest part of the beveled end should always go backward. The patient should be in the dorsal position.

Of valvular specula, all authors agree that the maximum of usefulness is found in the Sims instrument. This speculum consists

of two spoon-shaped blades of different sizes connected by a handle to which they are attached at right angles.

To use this speculum correctly, the patient must always be placed in the Sims position, and the anterior vaginal wall raised by means of a retractor, of which there are many kinds.

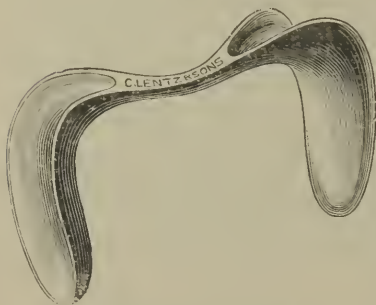


FIG. 21.—SIMS' SPECULUM.

The only disadvantage in the use of the Sims speculum is that it is impossible for the operator to hold it and the retractor in position and attend the patient, therefore causing the necessity of one or more extra assistants.

Many self-retaining modifications of this instrument

have been devised by Emmet, Thomas, T. B. Hunter, Erict, Mundé, and others, which, although more or less useful, have come but little into general use.

Method of Introducing the Sims Speculum and Retractor.—The patient should be placed in Sims' position, the clothing loose and raised; she should be covered by a sheet, so arranged as not to expose any part of her except the external genital organs. The speculum is grasped in the right hand with the index finger on the concave side of the blade. It is then passed into the vagina so that the convex side and the handle will be toward the sacrum, the labia at the same time being held apart with the left hand. Pass the blade downward and backward toward the hollow of the sacrum, at the same time drawing down the perineum. By this means the vagina is opened and air admitted; the patient being also in such a position that the abdominal viscera gravitate away from

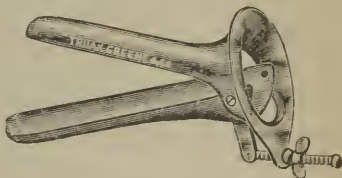


FIG. 22.—HIGBEE'S BIVALVE SPECULUM.

the uterus. The retractor being in place, the handle is given to an assistant, who holds it in his right hand. The assistant's left forearm should rest upon the patient's hip, while the right elbow and forearm are placed against his own body. This gives a firm, steady traction and prevents the assistant from soon becoming weary. The cervix should be seized with a tenaculum or volsella forcèps and drawn down. By the use of the Sims speculum, the patient being in the proper posture, the os and the cervix can be seen in their normal position, their relations being almost undisturbed. In operations on the vagina, os, and cervix this instrument is of the greatest use. Occasionally it is necessary to use, in addition, two lateral retractors to hold the sides of the vagina apart so as to allow more light to enter.

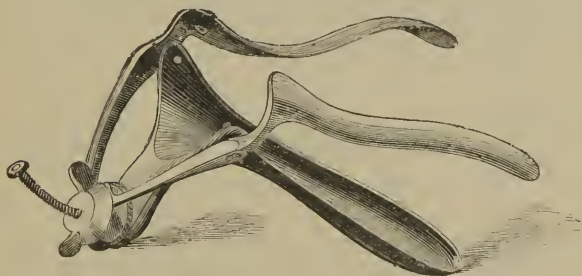


FIG. 23.—TRIVALVE SPECULUM.

Simon's Speculum.—This instrument is intended to be used with the patient in the dorsal or lithotomy position. It consists of a number of broad retractor blades of different sizes, which can be connected with a common handle by means of a catch. After inserting the speculum, the anterior or lateral vaginal walls are drawn apart by narrow retractors, the cervix being drawn down by a tenaculum.

Specula With Two or More Valves.—Numerous instruments of this class have been invented by Cusco, Ricord, Segnelas, Charriere, Goodell, and others. Among the best may be classed the instruments of Higbee and Goodell. Good trivalve specula have been invented by Nott and Nelson. The advantage of these in-

struments is that they are more or less self-retaining, thereby dispensing with an assistant. Their disadvantages are that several styles and sizes are needed to suit all cases; the vaginal wall often prolapses between the blades, thereby obscuring the view. In removing the instrument small portions of the mucous membrane or hairs may be caught between the blades, causing considerable pain. Operations on the cervix and vagina can not be done with these instruments.

Method of Introducing the Speculum.—The position of the cervix is first ascertained by digital examination, after which the labia should be held somewhat apart, so that hairs and folds of skin may not be caught between the blades of the speculum as it passes into the vagina. The speculum should enter the vulva with the long diameter of the blades corresponding with the longest diameter of the vulva—that is, perpendicular as the patient lies on her back. The blades should be nearly, but not quite,



FIG. 24.—SIMS' DEPRESSOR.

closed. After entering the vulva, the point of the speculum should be well inclined downward, thus avoiding the urethra or clitoris. Passing into the vagina, the instrument is turned so that the lower or longer blade lies flat upon the perineum, and is thus passed on until it engages under the cervix, which will lie on it. When the cervix is far back, or the vagina very narrow, some authors recommend a long speculum such as Taylor's. In short vaginas instruments such as Talley's have been recommended. The speculum should be removed in the same way as it is entered, the blades not being closed during its exit from the vulva. Most specula with more than one valve are used with the patient in the dorsal position. In inserting specula with more than two valves, follow the same general directions as in the use of the bivalve. All specula must be sterilized carefully before introducing. The various forms of bi- or trivalve instruments should be taken apart and subjected to thorough sterilization, by dry heat, boiling, or

by some of the other methods mentioned in the chapter on Antiseptics.

Tenacula, Tenacula Forceps, and Volsella.—In examinations and operations upon the cervix it is necessary to draw the cervix down so that a better view may be obtained and work upon it may be done more easily. For this purpose it is necessary to use a tenaculum, either plain or in pairs, working on a pivot-like scissors, called tenaculum forceps, or a volsella forceps, which consists of a pair of tenacula, each with two hooks, with the shanks joined like a pair of scissors. These instruments may be used either with or without a Sims speculum. Drawing down the cervix with a tenaculum through a bivalve speculum should never be attempted. To draw down the cervix without a speculum, the first two fingers of the right hand are introduced into the vagina until the anterior lip of the cervix is felt; the tenaculum, tenacula forceps, or volsella is guided along these fingers and the anterior lip grasped. In drawing down, care should be taken that the handles of the instrument do not press in the central line of the vulvar orifice, as considerable pain may be caused thereby. With the patient in the Sims



FIG. 25.—TENACULA.

position, and with the vaginal retractor, the tenaculum or volsella may be applied directly to the cervix by sight alone. For the introduction of tampons in the vagina and around the cervix, for packing the uterine cavity with gauze, or for use in placing suppositories within the uterine cavity, a pair of *dressing forceps* will be found indispensable.

Tampons are generally introduced through a speculum and are held in place by the forceps until the latter is withdrawn. *Uterine applicators* are generally made in the form of a small flexible sound without a bulbous extremity. They are composed of silver or aluminium. In using an applicator a small piece of cotton is

wound around the end of the instrument, this is dipped into the desired solution and applied to the uterine surface. Many opera-

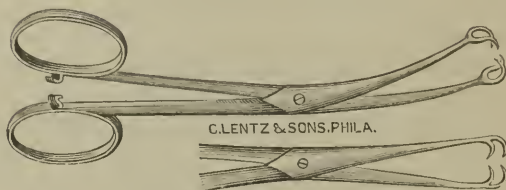


FIG. 26.—VOLSELLA FORCEPS.

tors recommend common cotton for this purpose, as it does not so easily absorb the medicines which may corrode the instruments.



FIG. 27.—UTERINE DRESSING FORCEPS.

For the withdrawal of mucus from the uterus some gynecologists use a long-nozzled syringe. This instrument is made of hard



FIG. 28.—APPLICATOR.

rubber; the nozzle may be bent to the shape of the uterine cavity before introducing, by first greasing and heating over a spirit-lamp. The curve can be retained by dipping into cold water.



FIG. 29.—UTERINE SYRINGE.

Dilatation of the Cervix.—Dilatation of the cervix for diagnostic purposes may be accomplished—

1. By tents.
2. By solid, parallel, or "glove-stretcher" dilators.
3. By elastic dilators containing a liquid or air.
4. By operative procedures.

Tents.—These are conical in shape and compressed so as to be easily introduced into the uterine canal. Their dilating power depends on their ability to increase in size by the absorption of liquid. All are more or less to be dreaded because of the danger of the introduction of septic substances with the tent. They are very difficult to render aseptic. Tents are composed of sponge, laminaria (sea-tangle), tupelo (*Nyssa aquatilis*), slippery elm, cornstalk, gentian-root, etc.

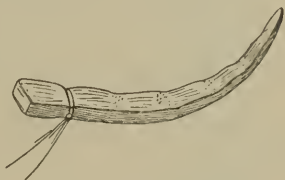


FIG. 30.—SLIPPERY-ELM TENT.

Sponge tents are but little used, as they are the most dangerous of this class of dilators, because of the ease with which they absorb septic matter. They also abrade the mucous membrane and are apt to break during removal, leaving pieces in the uterus. They expand easily.

Laminaria or Sea-tangle Tents.—This is a much less dangerous form of tent than the preceding. It, however, frequently has an uneven expansion, and quite often becomes hour-glass shaped through compression at the internal os, thus rendering its removal difficult.

Tupelo Tents.—This form of tent is much firmer than those before mentioned. It expands more slowly and is more efficient.

Slippery-elm Tents.—In cases where the os is very small, a tent may be constructed from a fresh piece of slippery-elm bark. The tent should be put in a hot-air sterilizer and afterward dipped in an ethereal solution of iodoform.

Gentian-root and cornstalk tents are but seldom used, having but feeble action.

Preliminaries to the Use of Tents.—1. The patient should be placed in the Sims or dorsosacral position.

2. The position of the uterus must first be accurately known.
3. The patient must have a vaginal douche of bichlorid of mercury, 1 : 2000; carbolic acid solution, five per cent.; creolin, one dram to the quart, or other suitable antiseptic, both before and after the introduction of the tent.
4. Before introduction, the direction of the uterine canal should be ascertained and the tent bent in the same direction.
5. After introduction, a tampon should be inserted in the vagina to prevent the tent from slipping out of the cervix. A string is usually placed through the outer extremity of the tent to facilitate its withdrawal. In introducing a tent the instrument is passed through a Sims or other speculum, by means of dressing forceps or the instrument known as a tent-carrier. The cervix may be

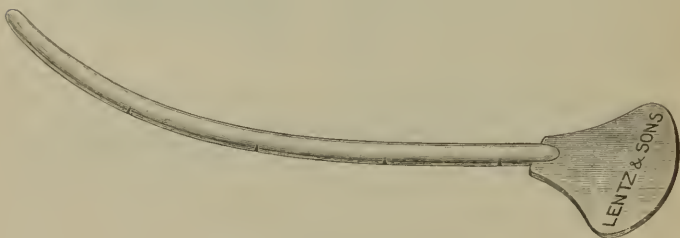


FIG. 31.—HEGAR'S DILATOR.

drawn down by means of a volsella or tenaculum; the tent should always be introduced by sight. Follow by the introduction of a tampon, as before stated. Many authorities recommend the introduction of an opium suppository. The tent should be taken out in from six to twelve hours; in removing it, draw in the direction of the uterine canal, and do not rotate. It is well that the patient should remain in bed for from twenty-four to thirty-six hours, and remain indoors for a few days thereafter.

Dilatation by Solid Bougies and Parallel Dilators.—Solid bougies for dilatation of the cervix have been devised by Peaslee, Hanks, Hegar, Kammerer, and others. Peaslee's and Kammerer's dilators resemble male sounds with a less acute curve, and are made of metal. For safety in introduction a bulb is placed about two and a half inches from the internal end. Hegar's in-

struments consist of a series of finely graded hard-rubber sounds, the smallest sizes of which are intended to be introduced first and the cervical canal rapidly forced open by increasing the size of the dilator. Hank's dilator is an S-shaped instrument with a central stem, a handle, and a bougie at each end. They are made of hard rubber or metal, and usually come in sets of six. Dilatation of the cervix may also be effected by means of ordinary male sounds. A strip of iodoform gauze passed into the cervical canal by means of dressing forceps makes, in many cases, an excellent dilator. It may be left in for from four to six hours and repeated if necessary. This method may be used to soften the cervix preparatory to the introduction of metal dilators.

Method of Introducing the Dilators.—

The greatest care must be exercised to keep the dilators thoroughly aseptic, and with this in view they should be sterilized by boiling and placed in an antiseptic solution before using. The insertion will be made more easy by dipping the instrument in vaselin. Immediately before introducing the dilator the patient should receive a vaginal douche of some suitable antiseptic. Either Sims' or the dorso-sacral position may be used and the operation will be facilitated by the drawing back of the perineum with a Sims speculum or retractor. Seize and steady the cervix with a tenaculum and introduce the dilator by sight in the same manner as a uterine sound. Always introduce the smallest-size dilator first and increase the size until the largest will easily pass in. Some authorities recommend the insufflation of iodoform

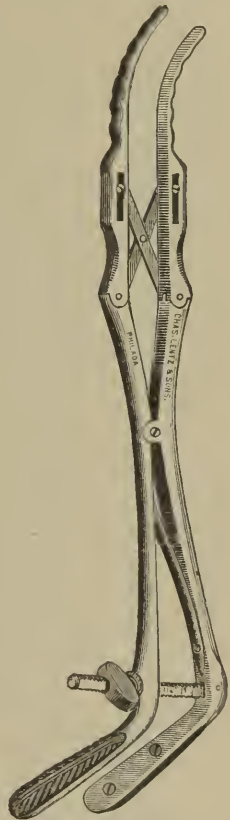


FIG. 32.—GOODELL'S PARALLEL DILATOR.

against the cervix and the filling of the vagina with iodoform gauze. The patient may remain in bed for a short time after the dilatation. Rapid dilatation of the cervix can be quickly accomplished by means of parallel-bladed instruments, such as Nott's, Ellinger's, and Goodell's. Dilatation with these instruments may be carried to a greater extent than by those before mentioned. It should rarely, however, exceed one inch.

Method of Introducing.—The same preliminaries, both as regards the preparation of the instrument and patient, obtain where the bladed dilator is used as in the preparation for the preceding class. The patient is usually placed in the dorsal position and should be under an anesthetic. Draw down the perineum with a Simon or Sims speculum, the vagina and cervix having been previously flushed out thoroughly with an antiseptic fluid; the cervix should be steadied with a tenaculum or volsella forceps. It is best to first begin the dilatation with the instrument of Ellinger or Nott, either of which is smaller than the heavy dilator of Goodell.

Insert the dilator with closed blades, being careful that it does not slip and lacerate the cervix. The handles should be slowly and steadily brought together. When dilatation has sufficiently advanced, the large instrument of Goodell may be brought into use if it is desired to still more enlarge the cervical canal. Parallel dilators are so constructed that the expansion is lateral, but it is usually best to carefully rotate the dilator so that the expansion shall be made uniformly in the other diameters.

It is sometimes necessary to repeat the application of the dilators before the cervical canal is sufficiently enlarged to admit the finger or a curet for diagnostic purposes.

Elastic Dilators.—For this purpose Barnes' bags are the means most usually employed. They are more used, however, in obstetric work than in gynecology. They consist of a number of india-rubber bags varying in size, in shape somewhat like a violin, and are intended to be inserted empty within the external os and gradually filled with air or water, by means of a piston syringe, water containing some antiseptic being usually employed to fill them.



FIG. 33.—BARNES' BAG.

As soon as the cervix has dilated to a sufficient extent to admit of a bag being easily withdrawn, a larger one is inserted. Another dilator of the same pattern, but containing two chambers for fluid, has been devised by McLean.

A certain amount of dilatation is necessary before a Barnes bag can be inserted. In dilating the cervix by this means the patient should receive a vaginal douche of some antiseptic, be placed in the dorsal position, and the bag passed into the cervix by inserting the index finger into the little pocket on its side, or by simply rolling it up on its long axis. When firmly inserted, an antiseptic fluid should be slowly pumped in with a piston or Davidson syringe, a pair of hemostatic forceps being used to prevent the return flow of the fluid. From one to three hours will be required for each size of bag to dilate sufficiently to allow of its easy withdrawal. Instruments more or less resembling the above have been devised by Allen, Emmet, and others. Dilatation by means of hydrostatic bags is generally evenly and safely accomplished, resembling considerably the true physiologic way. A great extent of dilatation can be had also by their means, with comparatively little danger of laceration of the cervix.

Dilatation by Operative Means.—In some cases it may be necessary to split the cervix on either side as high as the vaginal junction. For this purpose scissors are used, the incision being



FIG. 34.—WIRE-LOOP CURETS.



FIG. 35.—SHARP-EDGED CURET.



FIG. 36.—DULL-EDGED DOUCHE CURET.

deepened with a probe-pointed bistoury. The incision should be closed up by sutures immediately after examination. This form of dilatation is considered dangerous by most operators, and is seldom used.

The Curet.—Among the most useful instruments for removing small portions of various intra-uterine growths for diagnosis and for the treatment of diseased conditions of the endometrium, must be mentioned the curet. Curets may be classed under two heads, dull and sharp, and consist of a blade made either of a loop of wire sharpened on one side, or of a spoon-shaped blade connected with a long stem and handle. Among those commonly used may be mentioned the instruments devised by Sims, Recamier, Thomas, a wire loop which is flexible and dull ; Simon's spoon curet, and the dull douche curet of Carl Braun.

In using the curet the strictest asepsis must be observed in the preparation of the patient and instrument. The particular uses of various curets will be treated in the chapters on Diseases of the Uterus.

The dangers which may arise from the curet are: Perforation of the uterus ; peritonitis, particularly after the use of the sharp instrument ; inflammation of the uterus and connections ; atresia of the uterine canal ; hemorrhage, which may even occur some hours after the operation, and sepsis.

THE EXTERNAL GENITALIA.

The external organs of generation in the female, generally known as "vulva" or "pudendum," are : The mons veneris, labia majora and minora, fourchet or posterior commissure, and fossa navicularis, the hymen, vestibule, and the clitoris with its prepuce. To these may be added the orifice of the vagina and urethra.

The **mons veneris** is a cushion of fatty tissue surmounting the symphysis pubis. After puberty this, as well as the labia majora, are covered with hair.

The **labia majora**, analogous to the scrotum in the male, are two thick folds of skin extending from the mons veneris in

front to the perineum behind, forming an elliptic fissure which incloses the urinovaginal opening.

Each labium has an outer and an inner surface; externally it is continuous with the integument, and internally with the mucous membrane of the vagina. Like the mons veneris, its structure is fat and areolar tissue and a tissue resembling the dartos of the scrotum, also vessels and nerves.

Labia minora, or **nymphæ**, are folds of mucocutaneous tissue within each labium majus; anteriorly they converge and form the præputium clitoridis; from this they extend obliquely downward and outward to about the middle of the vaginal orifice, where they blend with the labia majora.

Clitoris.—Analogous to the penis in the male, but differing in that it has no corpus spongiosum and no urethra. It is situated in the median line between the labia minora, by which it is partly hidden from view. It consists of spongy, erectile tissue, and is extremely sensitive. Like the penis, it arises from the rami of ischia and pubis by a crus on each side; it has also a suspensory ligament and two small muscles—the erectors clitoridis.

Vestibule.—Immediately above the vaginal opening and within the labia minora is a smooth, triangular surface of mucous membrane; at the apex of this space is the clitoris, at its base the meatus urinarius, about an inch below it, near the margin of the vagina. Its lateral boundaries are the labia minora. The

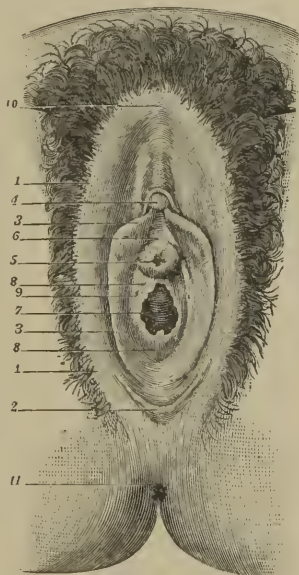


FIG. 37.—EXTERNAL GENITALIA OF FEMALE.

1. Labium majus of right side. 2. Fourchet. 3. Labium minus. 4. Clitoris. 5. Urethral orifice. 6. Vestibule. 7. Orifice of the vagina. 8. Hymen. 9. Orifice of the vulvo-vaginal gland. 10. Anterior commissure of the labia majora. 11. Orifice of the anus.

ducts of several small mucous glands open on the margin of the vestibule.

Hymen.—This consists of a thin fold of mucous membrane guarding the vaginal opening. It may be absent altogether or exist in different forms—viz. :

1. A mere marginal fringe—*H. fimbriatus*.
2. With a central aperture—*H. annularis*.
3. A number of openings—*H. cribriformis*.
4. Complete closure—Imperforate hymen.

It may persist after copulation ; hence it is not a sign of virginity, as sometimes stated.

Carunculæ myrtiformes are little elevations of mucous membrane around the orifice of the vagina. Schroeder maintains that they are produced by childbearing, and not by a simple tearing of the hymen.

Fourchet is a thin, transverse fold of mucous membrane within the posterior commissure ; during the first parturition it is usually torn.

The space between the fourchet and the posterior commissure, which is only noticed when the former is pulled down, is the **fossa navicularis**.

Glands.—1. The sebaceous glands are very abundant on the nymphæ ; they secrete a yellowish fluid which has a peculiar odor.

2. Mucous: (*a*) glands around the meatus, mentioned above. (*b*) Bartholini (vulvovaginal) glands are two compound, racemose glands situated one on each side just posterior to the lower extremities of the bulb of the vagina. Each gland has a duct about half an inch long, which opens in front of the hymen on each side. They secrete a glairy mucus.

Bulbs of vagina are small masses of erectile tissue about the size of an almond, lying under the mucous membrane on each side of the vagina. Each bulb projects anteriorly and unites with its fellow on the opposite side.

Relations of the External Genital Organs.—When the woman is standing, only the mons veneris can be seen. The labia majora and minora are in close apposition and are in a horizontal plane. The whole external position of the vulva is covered with hair after puberty.

Vessels and Nerves:

Arteries.—Branches of the external and internal pudics and epigastrics.

Veins.—Accompanying veins of the above-named arteries.

Lymphatics.—The lymphatic vessels of the vulva terminate in the superficial set of the inguinal glands.

Nerves.—The integument of the labia is supplied by the ilioinguinal, while the perineum and the deeper structures of the vulva are supplied by branches of the pudic.

DISEASES OF THE EXTERNAL GENITAL ORGANS.

VULVITIS (INFLAMMATION OF THE VULVA).

Varieties.—(1) Simple catarrhal, acute, or chronic. (2) Follicular. (3) Gonorrheal. (4) Phlegmonous. (5) Diphtheric. (6) Gangrenous. (7) Diabetic.

CATARRHAL VULVITIS.

Causes.—Lack of cleanliness, irritating discharges from vagina or cervix, friction from dress or injuries to the parts, struma, masturbation, pregnancy, coition, parasites, foreign bodies, fevers, etc.

Symptoms.—Those usually found in other forms of catarrhal inflammation: some general discomfort, swelling, burning pain on passing urine, local increase of temperature. Secretion is first arrested, the parts becoming dry, then increased, and the parts are excoriated with a discharge of glairy mucus. The inflammation may even involve the urethra.

Treatment.—Cleanliness the first consideration. Warm hip-baths should be given, with applications of lead-water and laudanum, if seen early. If the case has progressed beyond the early stages, dust the vulva (after it has been thoroughly cleansed) with starch, starch and calomel, bismuth, or borax powder. Lead-water and laudanum should also be applied, by soaking cotton or lint and placing between the labia; ichthyol, 5 to 10 parts to 100

of glycerin, applied on a tampon. If the irritation is caused by worms, such as the ascarides, it is well to use rectal injections of infusion of quassia, \mathfrak{z} ij to the pint of water. Keep the bowels open with salines.

CHRONIC CATARRHAL VULVITIS.

This form is usually found in strumous children.

Treatment.—Life in open air, cod-liver oil by inunction or mouth, syrup of the iodid of iron, and Fowler's solution.

Locally, nitrate of silver, grs. iv to \mathfrak{z} j, applied to the vulva; lead-water and laudanum, and powders applied as above; irrigations of creolin, \mathfrak{z} j to the quart, have been recommended.

FOLLICULAR VULVITIS.

Follicular vulvitis is a form of vulvov inflammation characterized by the formation of small pimples around the hair-follicles.

The **symptoms** are those of other forms, and the small papules will aid in the diagnosis.

Treatment.—Shave the parts. Puncture or cauterize each follicle and apply diachylon ointment, or ichthyol one part, lanolin four parts. Strict antiseptic cleanliness must be used (Montgomery).

GONORRHEAL VULVITIS.

Causes.—Always arises from entrance of gonorrheal poison, either by sexual intercourse with one having the disease, or by the poison being carried on instruments previously used on a case of gonorrhea, or by the hands of a physician similarly uncleansed.

Symptoms.—This form of inflammation of the vulva begins with a higher temperature, more swelling and pain than in the simple form of the disease; there is also great pain in passing urine. The urethra is extremely apt to become involved. The discharge becomes purulent and yellow or greenish in color. Gonococci will often be found. Swelling of the inguinal glands may occur.

The **diagnosis** can be made on the character of the discharge, the more severe onset of the disease, and the presence of the gonococcus of Neisser.

Treatment.—Put the patient to bed and order a light diet.

Open the bowels by salines and calomel in divided doses. Forbid alcohol in any form. Use the following :

R.	Unguent. cucumis,	3j	
	Alum,	3j	
	Tannin,	9ij.	M.

SIG.—Smear a small quantity on a pledget of cotton and place in the vagina at night. Remove in the morning and use injection of decoct. quercus alb. one pint, sodii boratis half an ounce (Horwitz, "Compend of Surgery").

Ichthyol applied on tampons of cotton has been recommended by some. If pain is great, lead-water and laudanum may be applied on cotton or gauze. Montgomery recommends that the vulva be painted with a mixture of one part Monsell's solution in eighty parts glycerin, or silver nitrate ten grains to one ounce of water, or compound tincture of iodine. Douches of bichlorid 1 : 1000, creolin, 3j to Oj, or other antiseptics are recommended.

PHLEGMONOUS VULVITIS.

Causes.—Same as in other forms except that traumatism plays a more important part in the causation. The seat of the affection is usually the labia majora.

Symptoms.—Same as in other forms, the pain being increased by walking or standing. The congestion and swelling often lead to the breaking down of the tissues, followed by suppuration.

Diagnosis.—Important to differentiate from hematoma of the vulva, labial hernia, displaced ovary, hydrocele of round ligament.

PHLEGMONOUS VULVITIS.

Forms more slowly.

Is hard at first, becoming softer.

VULVAR HEMATOMA.

Forms more quickly, and most frequent from pressure during labor.

Becomes harder.

PHLEGMONOUS VULVITIS.

Acute inflammatory symptoms.

Coughing produces no impulse.

Dullness on percussion.

Not capable of reduction.

History of traumatism.

LABIAL HERNIA.

Inflammatory symptoms not present unless hernia is strangulated.

Impulse present.

Tympany on percussion.

Possibility of reduction.

Generally none.

PHLEGMONOUS VULVITIS.	DISPLACED OVARY.
Acute inflammatory symptoms.	None.
Has irregular outline.	Definite shape and about the size of an almond.
Menstruation produces no change in size and sensitiveness.	Menstruation increases both size and shape.
Develops more gradually.	Appears suddenly.
Pressure does not produce in the patient the peculiar pain of an ovary.	Pressure on an ovary produces a peculiar pain.

PHLEGMONOUS VULVITIS.	HYDROCELE OF ROUND LIGAMENT.
Acute inflammatory symptoms.	None.
No communication with abdominal cavity.	Occasional communication with abdominal cavity.
Not translucent.	Translucent.

Treatment.—Rest in bed. If seen early, apply lead-water and laudanum and attend to general condition by prescribing tonics: quinin, arsenic, iron, etc. If the case appears to be tending to suppuration, open, wash out with bichlorid of mercury 1 : 2000, or other efficient antiseptics, pack with iodoform gauze, and drain.

DIPHTHERIC AND CROUPOUS VULVITIS.

Appears only in connection with constitutional diphtheria or croup, excepting in the puerperal state, when it is not a true diphtheria. Most common during childhood.

Diagnosis.—The grayish-yellow spots are soon followed by ulceration and redness of the adjacent parts. In diphtheria the membrane is firmly adherent, while in croup it is easily removed. In diphtheria the mucous membrane is transformed into a dead, coagulated mass, while in croup the membrane is deposited upon the inflamed mucous membrane.

Cases of primary diphtheritis of the vulva are very rare. Winckel claims to have seen but a single case.

Treatment.—The constitutional treatment would be the same as in other forms of diphtheria or croup. Locally, applications of antiseptics, such as peroxid of hydrogen, bichlorid of mercury, etc., are to be recommended.

GANGRENE OR NOMA OF THE VULVA.

Causes.—A poorly nourished condition of the tissues. May follow a long-continued pressure from the presenting part of the child during labor, the infectious fevers, and rarely severe cases of vulvitis.

Symptoms.—True noma usually occurs in poorly nourished children, and is a fatal disease.

1. Increase of redness and infiltration of one labia accompanied by a discharge of ichorous serum.

2. Vesicles form.

3. Formation of a slough, grayish green in color, with rapid spreading of the gangrene.

Treatment.—Incise, leave wound open, and keep constantly wet with antiseptic solutions. The system generally should be sustained by tonic treatments of quinin, strychnin, and arsenic. Alcohol and a good diet are indicated.

DIABETIC VULVITIS.

Cause.—Is apt to occur in the course of diabetes mellitus, probably from the presence of penicillium in the urine, the disease taking its origin from the urethra.

Symptoms.—Intense itching, the parts becoming later a coppery red with considerable swelling. The tissues become dry, wrinkled, and brittle. The disease may extend into the groin and over the mons veneris, or even to the folds of the nates and around the anus.

Treatment.—Constitutional treatment should be directed against the diabetic condition. Tepid solution of salicylic acid, bichlorid of mercury 1 : 1000, or a solution of hyposulphite of soda f3j to Oj. After the parts have been dried, an ointment of salicylic acid and vaselin 1 : 300 may be used. Benzoated zinc ointment, iodoform ointment, cocain, solution of carbolic acid ten per cent., or menthol five per cent., one to two per cent. solution silver nitrate, and many other agents have been recommended. The parts should be protected from contact with the urine and irritating vaginal discharges.

FOLLICULAR VULVITIS.

This form is found only in adults. It is an inflammation of the glands of the vulva. Mucous and sebaceous glands and even hair-follicles may be involved, producing small papillary elevations on the surface of the labia and prepuce. There may be an exudation of mucus and mucopus.



FIG. 38.—FOLLICULAR VULVITIS.

Causes.—Want of cleanliness, irritating discharges from the vagina, pregnancy, malignant diseases, a poor state of vitality.

Symptoms.—Burning on urination is present when the mouth of the urethra is involved. Vaginitis may be present.

Diagnosis is based on the small, round, red papillæ scattered over the labia, clitoris, and prepuce. When the mucous membrane alone is affected, the appearance is sometimes described

as resembling the mucous membrane of the tongue.

Treatment.—In mild cases same as in other forms. Solutions of nitrate of silver, grs. x to $\bar{3}$ j, or bichlorid of mercury, are highly recommended. Alkaline fomentations are useful. It is often necessary to empty the follicles by pressure-pads of dry absorbent cotton, or, as is recommended by some gynecologists, puncturing by means of a bistoury or bayonet-pointed scarificator, after which a mixture of equal parts tincture iodin and glycerin should be applied. Powders of calomel and bismuth dusted over the parts sometimes give relief.

PRURITUS VULVÆ.

Pruritus appears mostly as a symptom of other conditions. It arises often in the course of pregnancy, from uncleanness, irritating discharges from the upper part of the genital tract, from diabetes, tumors, etc. It occasionally appears about the menopause. Any cause producing congestion of the parts about the vulva may produce pruritus.

Symptoms.—Intense itching, particularly after walking or becoming warm in bed. As the condition progresses, the itching becomes constant, and the patient is so afflicted that she may become quite melancholic.

Treatment.—Treat the cause when possible. Diet should be regulated to suit the causal disease. Strict cleanliness must be observed. When the condition is produced by diabetes, a course of salicylate of soda is recommended. The patient should take warm sitz-baths and have the parts affected by the pruritus washed with any of the following: Lead-water and laudanum, applied hot, or carbolic acid, two to three per cent. The parts should be well dried and dusted with equal parts of calomel and bismuth. Nitrate of silver, grs. viij-xij to the ounce, or beta-naphthol and sulphur ointment to allay the irritation, may be used.

CYST OF VULVOVAGINAL GLAND.

Causes.—Occlusion of the duct of the glands of Bartholin, from catarrh, gonorrhea, extension of inflammation from the gland itself (bartholinitis), or from the vulva.

Symptoms.—A tumor the size of a walnut, without inflammation, can be felt over the site of the vulvovaginal gland, which is situated at the sides of the ostium vaginæ, between the vagina and the ascending branch of the ischium. The ducts of these glands open just anterior to the hymen or the carunculæ myrtiformes. When the seat of the cysts is in the duct of the gland, the tumor is more elongated than when it is in the gland.

Treatment.—Excise a portion of the mucous membrane in the shape of an ellipse over the inner surface of the sac. This exposes the sac and enables a large elliptic piece to be cut from

it. The sac must be emptied and packed with iodoform gauze. Antiseptic dressings must be applied. A second method is to dissect out the entire sac, the edges of the wound being afterward approximated and stitched together with catgut.

ABSCESS OF THE VULVOVAGINAL GLAND.

Causes.—Same as those of a cyst. May develop from a cyst.

Symptoms.—Pain and heat with a hard tumor in the situation of the vulvovaginal gland, the inflammation often extending to the orifice of the duct. Considerable tenderness on pressure. As pus is formed in the abscess-cavity, fluctuation can be felt.

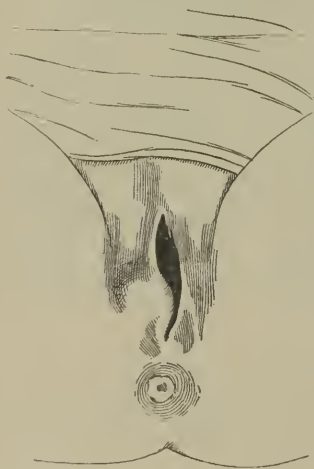


FIG. 39.—ABSCESS OF THE VULVO-VAGINAL GLAND.

Diagnosis.—Abscess of the vulvovaginal gland may be distinguished from a cyst by the presence of inflammatory symptoms and its sensitiveness on pressure; from phlegmonous vulvitis, principally by its more distinctly globular outline; from pudendal hernia it can be differentiated by its lack of impulse on coughing, the inflammatory symptoms, and its not being capable of reduction.

Treatment.—If seen early, apply lead-water and laudanum, or a poultice of flaxseed, or cold applications. Sitz-baths may be employed. If symptoms continue and pus forms, the abscess should be opened on its inner surface and the sac dissected out, as in the case of a cyst, or scraped out with a sharp curet, washed out with a solution of bichlorid of mercury 1 : 1000, and packed with iodoform gauze. An antiseptic dressing must be applied. The patient should be put to bed. It should be remembered, in extirpating the sac of a cyst or abscess of the vulvovaginal gland, that

troublesome hemorrhage may be encountered from the bulbs of the vagina and the transversus perinæi artery.

HERNIA INTO THE LABIUM MAJUS (PUDENDAL HERNIA).

This corresponds to scrotal hernia in the male. It is caused by non-obliteration of the canal of Nuck, a process of peritoneum which, during embryonic life, follows the round ligament through the inguinal canal to its point of termination in the greater lips of the vulva. Usually this canal is cut off about the time of birth.

Pudental hernia is divided into anterior and posterior; the anterior is much the more common. In anterior (hernia labialis inguinalis), the ovary, bowel, and omentum descend through the inguinal canal, being forced along the round ligament to the external ring and thus into the labium majus. Posterior (hernia vaginalis labialis) is a very rare form. The bowel, omentum, ovary, or Fallopian tubes may pass through a defect in the pelvic fascia anterior to the broad ligament, and along by the side of the vagina, appearing in the posterior portion of the labium majus.

Causes.—Straining at stool, blows, falls, or violent exertion.

Symptoms.—In the anterior form of pudental hernia a rounded, soft, insensitive tumor will be felt in the upper part of the labium, sometimes resonant on percussion, and usually disappearing with a gurgling sound if the patient is placed in the knee-chest position. In the posterior form of hernia the tumor is felt under the pubic ramus.

Diagnosis.—Pudental hernia can be differentiated from cyst or abscess of the vulvovaginal gland by the cyst or abscess being more posteriorly situated in the labium, and being tense, tender, not capable of reduction, and can not be traced upward. Abscess of the vulvovaginal gland has surrounding it the usual area of inflammation.

Treatment.—Reduce the hernia if possible and retain in position by means of a truss or belt with a pad attached to a stem.

HYDROCELE OF THE ROUND LIGAMENT

Is a collection of fluid in the tube-like pouch of peritoneum, which accompanies the round ligament through the inguinal canal (canal of Nuck). The exudation of fluid may take place also in the tissues of the round ligament itself or into the labium majus external to the covering of the round ligament. The affection is one of the greatest rarity.

Diagnosis.—A tumor in the labium majus or inguinal region in which fluctuation may be obtained and which is translucent. No inflammatory symptoms, as in abscess of vulvovaginal gland; no impulse on coughing, as in pudendal hernia.

Treatment.—Same as in hydrocele in the male.

PUDENDAL HEMATOMA.

This is sometimes called hematocele, thrombus of the vulva, etc., and is an effusion of blood into the vulvovaginal tissues or into the areolar tissues surrounding the vagina. It is usually unilateral, occurring in the labia of one or the other side.

Causes.—Blows, falls, pregnancy, tumors. It frequently occurs after labor, or from strong bearing down after sewing a lacerated perineum, or it may arise from any condition producing or accompanied by a dilatation of the vessels about the vulva.

Symptoms.—Sharp, tearing pain accompanied by more or less faintness. If the effusion is large, it may press on the urethra, causing difficulty in micturition.

Diagnosis.—Pudendal hematoma can be distinguished from labial hernia by the history, the absence of impulse, and its lack of resonance on percussion, the hernia being tympanitic; its irreducibility, and the fact that the tumor of hematoma or hematocele is soft at first, later becoming hard.

Treatment.—Try to check the flow of blood by applications of ice, pressure, or both. If the hemorrhage is large or dangerous, or if it obstructs the passage of the presenting part during labor, the best treatment consists in incision, emptying under antiseptic precautions, and packing with iodoform gauze. If the effusion is small, lead-water and laudanum or aluminium acetate have been advised.

HEMORRHAGE FROM THE VULVA.

Causes.—Lacerated or punctured wound, tearing or rupture of varicose veins of the labia.

Occurring in young children shortly after birth, it is apt to mark a profound change, either in the blood itself or in the condition of the vaginal mucous membrane. Secondarily, from hematoma.

Treatment.—Try to find the bleeding vessel, catch with a pair of hemostatic forceps, and tie. If the vessel is small, compress the bleeding point with a pad and bandage, putting the patient in a state of complete rest. Pack the vagina with tampons saturated with a hot solution of creolin. In young children the condition should be treated by injections of hot creolin solution locally, the condition of the blood being improved by arsenic and inunctions of olive or cod-liver oil.

CUTANEOUS DISEASES OF THE VULVA.

The principal diseases affecting the vulva are: eczema, erythema, kraurosis, leukoplakia, acne, herpes, prurigo, scabies, erysipelas.

ECZEMA.

Causes.—Irritating discharges from vagina or cervix, disturbance of the gastrointestinal tract, menopause, vesicovaginal fistula, diabetes.

Symptoms.—In the acute form the eruption is characterized by vesicles and some inflammation of the underlying skin. The vesicles break and discharge a serous fluid, which tends to dry and form scabs. Severe itching and burning accompany the condition. In the chronic form the skin of the affected parts becomes thickened and covered with scales. Subjective symptoms same as in the acute form.

Treatment.—*Acute Stage.*—Moderate doses of calomel with salines, restricted diet with local soothing applications; of these, bismuth powder, douches of ten per cent. solution of carbolic acid, hip-baths, or benzoated zinc oxid ointment, containing five or ten per cent. of carbolic acid, are frequently used. Strips of lint covered with diachylon plaster, applied after thoroughly scrubbing

the parts with green soap, have also been recommended. In *chronic cases*, five per cent. solution of carbolic acid, or elm poultices following a wash with strong potash soap, or the following ointments—

R. Unguent. hydrarg. ammoniat., ℥j
Lanolin, ℥ij.

Or—

R. Iodoform, ℥ij
Lanolin, ℥ij.

—*Montgomery.*

may do good. Almond or other bland soap may be useful to wash off the scabs, after which the ointments should be applied. The general condition should be attended to by arsenic, iron, and tonics.

ERYTHEMA.

This is especially liable to occur in hot weather and in stout persons.

The **causes** are dirt, rubbing of the parts, irritating discharges.

Symptoms.—Redness of the parts, considerable sensitiveness. The affected parts are often excoriated and painful during exercise.

Treatment.—Laxatives, diuretics, mild drying powders, such as subnitrate of bismuth, zinc oxid, or calomel.

KRAUROSIS (*χραῦρος*, *shrunk*, *dry*).

A rare disease described by Breisky, of Vienna.

Symptoms.—The skin of the labia and mucous membrane of the labia majora and nymphæ and of the vestibule, as well as the outer surface of the hymen, become white, tense, and contracted. Severe pains, coming in paroxysms and at irregular intervals, accompany the condition. May affect virgins. The treatment recommended by Heitzmann consists in cureting with a sharp instrument and painting the surface with a saturated solution of salicylic acid.

LEUKOPLAKIA.

This is a rare disease, characterized by the formation of white patches or plates on the mucous membrane of the labia, vagina, cervix, and urethra. These patches are formed by thickening of

the epithelium of the parts affected. The patches are at first scattered, but later coalesce until the mucous membrane is covered. According to Duret, the disease has a decided tendency to develop into epithelioma.

ACNE.

Consists of an engorged condition of the sebaceous follicles covering the labia. The engorgement is caused by an abnormal increase in the true secretion of the follicles or obstruction of their ducts.

Treatment.—Lead-water and laudanum, zinc oxid, bathing with tepid water, and attention to the general health.

HERPES.

Consists of one or more groups of vesicles without inflammation of the surrounding skin; often occurs during menstruation or pregnancy. The treatment should consist in opening the bowels and applying a soothing lotion. A douche of borated water or mild carbolio solution is recommended. Powders of zinc oxid, or acetanilid and chalk in equal parts, are efficient.

PRURIGO.

A papular eruption, causing distressing itching and pruritus.

Treatment.—Carbolized zinc ointment, alone or with two per cent. of menthol added. Chloroform in almond oil relieves the itching in some cases.

SCABIES.

Cause.—This is a parasitic disease produced by the *acarus scabiei*. It is usually part of a general infection.

Symptoms.—Intense itching, increasing when the body is warm. As the disease is part of a general infection, the burrows of the itch-mite can be found in other parts of the body.

Treatment.—A warm bath, with free use of soap, followed by dusting the parts with sulphur. Sulphur combined with balsam of Peru is highly recommended by some authorities. Ointments composed of sulphur or mercury may also be applied.

PEDICULI (*Pediculus Pubis*).

May be found about the external genitals.

The **symptoms** are the same as in other parts of the body.

The best **treatment** is to shave the hair and thoroughly rub in oleate of mercury in strength of ten per cent.; bichlorid of mercury, 1 : 1000; carbolic acid solution, five per cent., or the tincture of delphinium.

ERYSIPELAS.

This disease occurs mostly in new-born infants or puerperal women. The symptoms are the same as in other forms of the disease, and should be treated in the same manner. It is a rare affection.

TUMORS OF THE VULVA.

PAPILLOMATA (WARTS), SIMPLE PAPILLOMATA.

These occur rarely on the vulva. If found to cause inconvenience or to have rapid growth, may be destroyed by means of acetic or nitric acid or removed by excision.



FIG. 40.—ELEPHANTIASIS OF VULVA.

CONDYLOMATA ACUMINATA.

May be due to gonorrhea or irritating discharges found chiefly on the lesser labia at the posterior commissure. They are always multiple.

Treatment.—Excision with scissors or with a knife, followed by touching the stump with nitric acid. Cocain may be used to allay pain.

CONDYLOMATA LATA.

These occur on the inner side of the labia majora, on the perineum, and about the anus. They are always of syphilitic origin and should be treated on antisiphilitic principles.

ELEPHANTIASIS OF THE LABIA AND VULVA.

Most commonly appears on the labia majora and clitoris, though the labia minora may be affected.

The **diagnosis** can be made from the fact that the tumor is in the skin itself and can not be separated from it.

Treatment.—Removal by cutting and suturing. *Fibromata* and *lipomata* of the vulva are usually found in the labia majora. The treatment consists in dissecting them out and closing the wound with deep sutures.

LUPUS.

May occur either on the labia majora or minora, or both. It appears as a smooth, bright-red colored swelling, varying in size from a pea to a pigeon's egg, healing in one place and ulcerating in another. The inguinal glands are not enlarged (Winckel).

Treatment.—Remove diseased parts when possible. Thorough cureting with a sharp spoon should be tried, followed by disinfection with a strong acid. Free incision may be made to aid cicatrization. Cauterization by electropuncture is recommended by some. The treatment must be repeated until all the foci of disease are destroyed.

MALIGNANT TUMORS OF THE LABIA AND VULVA.

These are rare. In the order of their frequency they are: Epithelioma and scirrhus carcinoma, sarcoma, and medullary sarcoma. Epitheliomata appear as small, round, hard nodules of a whitish color on the inner surface of the greater labium.

The other tumors of this class are extremely rare. As primary growths, when they do appear, they are generally first seen on the greater labium. Scirrhus may develop in the clitoris and surrounding tissue. Sarcoma occasionally originates in the nymphæ.

These tumors appear as deep, hard nodules, rapidly spreading toward the surface of the skin, having the characteristic appearance of cancer in other parts of the body.

Treatment.—Excision, when possible. When the disease is too far advanced, use thorough cleanliness by means of antiseptic irrigation, with anodynes for relief of pain.

VAGINISMUS.

Definition.—A painful and spasmodic contraction of the vaginal orifice, which more or less effectually prevents coition.

Cause.—This condition is in many instances caused by an extremely sensitive condition of the carunculæ myrtiformes, the remains of the torn hymen. These, which normally are insensitive, become so tender that the slightest touch will produce violent contraction of the sphincter vaginæ muscle. A microscopic examination of one of the caruncles will frequently show that while the outward appearance is unchanged, an excessive number of nerve-filaments can be demonstrated. They are practically neuromata. Vaginismus may also be caused by an eroded and tender vaginal orifice. Fissure beneath the clitoris, fissure of the anus, or urethral caruncle may also produce this condition. A long perineum has been ascribed as a cause.

Treatment.—If the condition is caused by a hypersensitive caruncle, it should be dissected out, the patient being under an anesthetic. When arising from a sensitive or thick hymen, the latter may be forcibly dilated by inserting the thumbs and separating them, the patient being anesthetized, the vaginal orifice being afterward dilated by means of a Sims glass vaginal plug. Among the various means for the relief of vaginismus, not so radical as the above, may be mentioned: Injections of warm water and laudanum, a ten per cent. solution of cocain, or ointments of iodoform, eucalyptol, belladonna, opium, or chloral in solution, may be applied either in a vaginal suppository or painted over the orifice a short time before coition.

COCCYGODYNIA.

Definition.—"Coccygodynia consists of a morbid state of the coccyx or of the muscles attached to it, which renders their contraction and the consequent movement of the bone very painful" (Thomas and Mundé). It is most common in women who have borne children.

Causes.—Injuries during parturition, blows and falls on the coccyx, cold or exposure, uterine or ovarian disease, horseback exercise (Scanzoni), neurasthenia.

Diagnosis.—It should be distinguished from spasmodic muscular contraction due to ascarides in the rectum and anal fissure. There is very seldom any degeneration in health, although the condition may last a long time.

Symptoms.—Severe pain in the region of the coccyx, increased by motion and particularly any movement causing contraction of the coccygeal muscles, such as rising from a low seat or after sitting for some time, coition, defecation, or walking.

Treatment.—The general health should be looked after. Local treatment in the form of hypodermic injections of morphin, gr. $\frac{1}{6}$ to $\frac{1}{4}$, blisters over the coccyx, or the galvanic current, are recommended. If these fail, then section of the muscular attachments of the coccyx should be practised, as follows: The operation may be done with a tenotomy knife, which is passed under the skin at the lowest part of the coccyx, turn the knife flat, and carry up between the skin and cellular tissue until its point reaches the sacrococcygeal junction; then turn the edge so that in withdrawing it the coccyx is entirely freed from its muscular attachments. When the operation is completed on one side of the bone, it must be repeated on the other. In many cases where the bone is diseased it will be found necessary to make an incision over the coccyx, lay bare the bone, sever its attachments, and remove the whole of it by a pair of bone-forceps.

URETHRAL CARUNCLE.

This is a small, raspberry-like, sensitive tumor found at the mouth of the urethra, often causing severe itching and pain.

Its cause is uncertain. The distress arising from it often produces hysteria and melancholia. May be single or multiple, more commonly the former.

Diagnosis.—It is differentiated from venereal warts by its greater vascularity and the fact that it is usually single, and its much greater sensitiveness; from urethral polypus, by its sensitiveness and greater vascularity; prolapse of the urethral mucous membrane usually

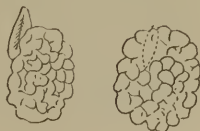


FIG. 41.—URETHRAL CARUNCLE.

surrounds the orifice like a small collar, can be reduced by manipulation, and is less sensitive.

Treatment.—If small, the application of the actual cautery, the patient being under anesthesia. If large, excise, taking care to include some of the tissue below the base to prevent its return. Any hemorrhage may be controlled by small sutures. Some operators prefer ligating the tumor before excising it, or touching the stump with nitric acid.

URETHROCELE.

This is a localized dilatation of the urethra in some portion of its extent, forming a sac with a more or less constricted mouth.

Cause.—Injury in labor is the most generally ascribed cause.

Symptoms.—Sharp, cutting pains on urination, the desire to empty the bladder being constant. If the sac is of any size, the urine collects and is expelled when the patient laughs or coughs; considerable excoriation of the parts is produced by the urine.

Diagnosis.—By passing a curved sound, the point pressed against the urethral wall, it is arrested by the sac, and a small amount of urine is passed before the sound enters the bladder.

Treatment.—The treatment described by Bozeman consists in making an opening on the anterior wall of the vagina, at the most dependent part of the sac, thus allowing free drainage. A plastic operation is performed later to restore the urethra to its normal condition.

URETHRAL STRICTURE.

These are rare. The causes are injuries during labor, gonorrheal urèthritis, syphilis, rarely tuberculosis, applications of strong corrosives, such as nitric acid or bichlorid of mercury. Vesicovaginal fistula of long standing may produce a gradual narrowing of the urethral caliber. The treatment consists of dilatation by Hegar's dilators, commencing with one of the small sizes and gradually increasing. The dilatation should be made by slow degrees to avoid rupture of the urethra.

PROLAPSE.

Prolapse, or ectropion of the urethral mucous membrane, is a condition sometimes found in female children. Urethritis, rectal

irritation from fissure, prolapse, hemorrhoids, intestinal parasites, are frequently associated.

Treatment.—In recent cases, replace the prolapsed membrane and put the patient to bed for some days, using suppositories of tannin or applications of dilute carbolic acid or iodine. The primal cause should be sought for and treated. If the condition should continue, the redundant mucous membrane should be excised, and the external or vaginal and the urethral mucous membrane brought together by radiating sutures of fine silk. The Paquelin or galvanocautery may also be used for the same purpose. Where great redundancy exists, Emmet's button-hole operation may be done as follows: A hole is made in the urethrovaginal septum, and the urethral mucous membrane is drawn through until the prolapsed portion is returned into the urethra, when it is stitched in the angles of the wound and snipped off. The fistula may be closed at once or later.

VULVOVAGINAL HYPERESTHESIA.

This is an excessively sensitive condition of the nerves of the whole or part of the vaginal mucous membrane at the entrance of the canal. The labia majora, as a rule, are not included.

Causes.—A general state of malnutrition and neurasthenia; urethral caruncle. Often no cause can be found.

Symptoms.—Sudden flinching when the parts at the vaginal

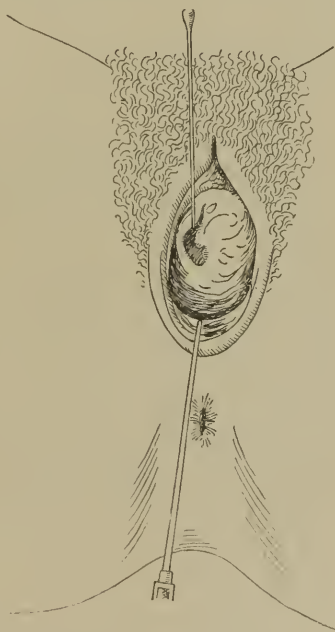


FIG. 42.—PROLAPSE OF URETHRA.

entrance are touched ever so lightly. If the finger, however, is placed well in the vagina or on the hymen, it may be borne without complaint. Coition is painful. In some cases there may be a certain amount of inflammation of the internal genital organs.

Treatment.—Soothing applications, such as a five to ten per cent. solution of cocain, zinc oxid ointment. Bromids internally sometimes do good. Attention should be given to the general health, and, if a state of neurasthenia exists, a change of air, massage, tonics, etc., should be prescribed.

ANATOMY OF THE VAGINA.

The vagina is a musculomembranous canal situated behind the bladder and in front of the rectum. It extends from the vulva to the uterus.

Its direction corresponds to the axis of the pelvic cavity, or at an angle of about 60° to the horizon when the woman is in the erect position. When distended, the vagina is cylindric in shape, though ordinarily the walls are in contact with each other. The anterior wall is about three and one-half to four inches in length, and the posterior about two inches longer. Above, the cervix uteri extends into the vagina for about one inch. The vaginal tissue is inserted into, or more properly, is continuous with that of the cervix, forming a series of arches or fornices—the anterior, posterior, and lateral culdesacs. At its orifice the vagina is somewhat constricted, and this is its narrowest portion.

Structure.—The structure of the vagina consists of an external or fibrous layer, which is continuous with the perineal and pelvic fascia and contains large plexuses of veins, a middle or muscular layer consisting of longitudinal and circular fibers closely interlaced. The mucous coat is continuous with that of the uterus and presents numerous transverse ridges or rugæ. These are frequently partly obliterated after childbirth. They are more strongly marked on the anterior wall than on the posterior, are studded

with papillæ and are connected by a thickened vertical ridge called the anterior column of the vagina. A similar but less marked ridge exists on the posterior wall.

The mucous membrane is covered with squamous epithelium. The anterior wall is in relation with the urethra, lying behind the latter, and to a slight extent with the bladder and ureters. The posterior wall is in relation and is closely attached, by cellular tissue, to the rectum and with the lowest portion of the peritoneum. This is known as Douglas' culdesac. The posterior wall is externally and below in relation with the perineal body. Laterally, the walls of the vagina are in relation with the pelvic cellular tissue and the bulbs of the vagina. These latter consist of masses of erectile tissue lying on each side of the vaginal orifice and covered by the sphincter vaginæ muscle.

The muscles in relation with the vagina are the sphincter and constrictor vaginæ and the levatores ani.

Arteries.—The vaginal branch of the internal iliac. It descends along the sides of the vagina and sends anastomosing branches all through the mucous membrane.

Veins.—The whole mucous membrane, especially near the orifice, is supplied by a network of veins which communicate with the vesical plexus in front and the hemorrhoidal plexus behind.

Lymphatics.—The lymphatics of the mucous membrane terminate in the sacral and lumbar glands, except the lower fourth, which is drained by the inguinal chain.

Nerves.—Branches of the hypogastric plexus and fourth and fifth sacral nerves.

DISEASES OF THE VAGINA.

ATRESIA OF THE VAGINA.

Atresia of the vagina may be congenital or acquired. The congenital form is generally caused by some defect in the coalition of Müller's ducts or some inflammatory condition of the mucous

membrane preceding birth, producing adhesions of the mucous surfaces of the vagina or hymen.

The obstruction may be in the upper or middle portion, or the whole canal may be occluded. Where the atresia is complete or very extensive, it is apt to be accompanied by deficient development of the ovaries and uterus. Atresia may be acquired from caustic remedies carelessly applied; long pressure of the presenting part during labor, causing sloughing of the mucous membrane; mechanic agencies, as foreign bodies; impervious hymen; syphilitic or other extensive ulcerations.

Symptoms.—In the congenital form the condition may not be discovered until puberty; then amenorrhea, more or less complete, will probably exist. The notice of the gynecologist is generally called to the deformity when the patient marries, by the amenorrhea, accompanied by recurrent pains at the menstrual period, and by an inability to perform the act of coition. Accumulation of menstrual blood will occur, causing pressure on the bladder and rectum, and as the accumulation increases, pelvic hematocele, pelvic peritonitis, hematosalpinx, hematometra or pyometra, or pyosalpinx occur, followed by rupture of the uterus or tube.

HEMATOCOLPOS

Is an accumulation of menstrual blood in the vagina caused by stenosis of the vaginal walls or imperforate hymen.

Symptoms.—Pain, particularly just after menstruation, with little or no flow of menstrual blood. On examination the vaginal entrance will be found occluded by the hymen, and under the pubic arch there is an elastic tumor, which, as the accumulation increases, will extend above the pubic bone. Rectal examination proves the presence of an elastic, globular tumor, completely or partially filling the pelvis. A catheter in the bladder will aid in diagnosis.

Treatment.—Evacuation of the fluid under the strictest anti-septic precautions. The tendency to contraction should be guarded against by having the patient wear a glass plug.

Dangers.—Rupture of a dilated and adherent oviduct. Sepsis, due to infection of contents of vagina. Injury to bladder or rectum.

As a rule, operation for atresia due to congenital closure or absence of the vaginal canal itself should be done—

1. If menstrual blood be retained.
2. If a uterus can be distinctly discovered and the patient be suffering from amenorrhea.
3. If the necessity for sexual intercourse be imperative. It should be avoided in other cases.

PROLAPSE OF THE VAGINAL WALLS (COLPOCELE).

Varieties.—Either the anterior or posterior walls may prolapse. The former is very rare without accompanying prolapse of the bladder. The latter more frequently appears. Accompanying prolapse of the uterus is common.

Causes.—Laceration of the perineum, pressure on the vagina from tumors above, traction from below, lack of tone in the uterine ligaments or in the tissues of the vagina itself. Distention of the uterus during pregnancy. The condition occasionally but rarely occurs in children. Prolapse of the vaginal mucous membrane alone is known as *colpocele*; where the bladder shares in the prolapse, the affection is called

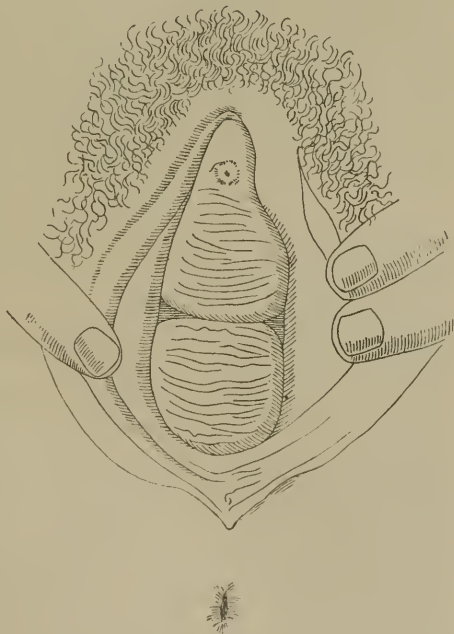


FIG. 43.—CYSTOCELE AND RECTOCELE.

cystocele. Falling of the posterior vaginal wall, accompanied by the rectum, is designated *rectocele*.

Symptoms.—Pain and discomfort; sense of bearing down, with heat and fullness around the vulva. Physical examination demonstrates a tumor, which is firm to the touch, but contains no liquid. Excoriation of the vaginal mucous membrane is apt to be present. When the bladder is displaced (*cystocele*), straining at urination is present, and a catheter passed into the bladder will be found to go downward and backward, instead of upward as in the normal condition. If *rectocele* appears, symptoms of difficult evacuation of the bowel, tenesmus, and a feeling as if the bowel was not entirely emptied will be felt.

Diagnosis.—The vaginal wall is displaced downward, forming a tumor which projects from the vulva, this tumor being increased when the patient bears down. This is particularly to be noticed when *cystocele* is present. In *rectocele* a finger introduced into the rectum will easily pass into the posterior tumor. In *cystocele* the examining finger passes behind the tumor; in *rectocele*, in front of it.

ENTEROCELE.

Enterovaginal hernia consists in the descent of a portion of the small intestines into the pelvis, so as to encroach on the vaginal canal (Thomas and Mundé).

Enterocoele may produce dangerous results in labor, through pressure upon the intestines by the presenting part of the child. It is a rare condition.

Treatment of Vaginal Prolapse.—Where the vagina alone is displaced, and not to a very marked degree, replace the prolapse, using tampons of cotton or wool saturated with alum, tannin, or zinc. Injections of these astringents may aid in the cure. Tampons covered with equal parts of iodoform and tannin have been recommended. In stout patients an abdominal bandage may give support and relief. Where enterocoele exists, replace by taxis. In replacing a prolapse with accompanying *cystocele* and *rectocele*, place the patient in the knee-chest position and have bowels and bladder well emptied. After replacing the *cystocele* a ring pessary or the pessary of Gehrung will be found useful for holding the prolapse in place.

OPERATIONS FOR CYSTOCELE AND RECTOCELE.

In the majority of cases the cure of vaginal prolapse, either primary or secondary, must be through surgical means, the suit-

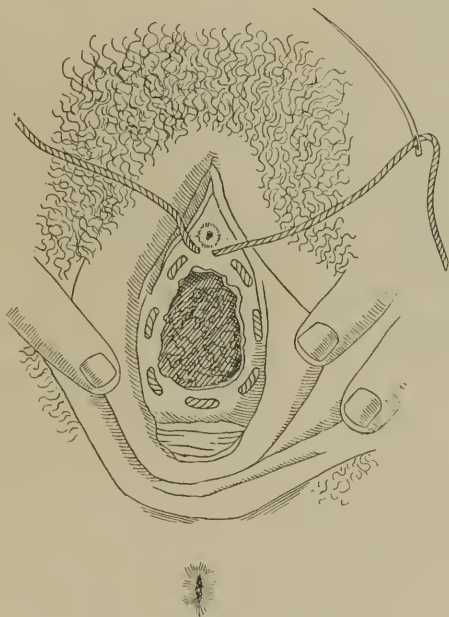


FIG. 44.—STOLTZ'S OPERATION.

able operation being dependent on the cause and nature of the prolapse. When due to redundancy of the anterior vaginal wall, allowing descent of the bladder (cystocele), one of the following operations should be performed :

Stoltz's Operation for Anterior Colporrhaphy.—Denude a circle of mucous membrane embracing the larger part of the prolapsed vaginal wall, and passing a rather thick suture around the circle, carrying it in and out the mucous membrane about one-eighth of an inch from the edge of the denuded surface.

Great care must be taken that the buried portion is thoroughly aseptic. The sutures are drawn, the wound being closed like the mouth of a purse. The denuded portion is pushed up, the vagina being narrowed by the amount of the denudation. For suture material catgut or silk may be used. They should be left in for eight or ten days.

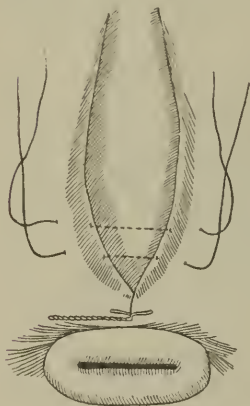


FIG. 45.—EMMET'S OPERATION, SHOWING AREA OF DENUDATION.

Emmet's Operation for Anterior Colporrhaphy.—The description of this operation is taken from the "American Text-book of Gynecology." A point just posterior to the urethra is marked, and another in front of the cervix, with tenacula; the lateral walls of the vagina, midway between cervix and meatus, are brought together. If they can be approached too readily, the tenacula should grasp further out. The object is to catch up the sides of the anterior wall at points which may be approxi-

imated without too much strain. These points being determined, they are marked. The four points thus chosen are united by an oval line, the greatest diameter of which is at the middle of the vagina, or where there is the greatest amount of slack in the wall. Denudation is made with scissors. Sutures, preferably of silk-worm-gut or catgut, are passed transversely, as in figure 45. The after-treatment consists in keeping the patient in the horizontal position, drawing off the urine by a catheter, and producing constipation by means of opium.

Winckel's operation consists of simply cutting an oval through the mucous membrane of the anterior vaginal wall, the point of the knife or scissors being inclined outward, so as to dissect or loosen a certain amount of the tissue; no surface is denuded. Sutures are passed across the edges of the oval, drawing them together, thus covering the patch of mucous membrane inside of the oval. The after-treatment of all is the same.

PROLAPSE DUE TO TEARING OR RELAXATION OF THE PERINEUM.

Anatomy of the Perineum.—The perineal body is a wedge-shaped mass situated between the posterior border of the vulva and the anterior border of the anus. It forms a wedge, and is composed of muscles, areolar tissue, fat, nerves, and vessels. The important muscles are the two deep transversus perinæi, levatores ani, which meet in the upper portion of the medium line of the perineum and are attached to the pubic ramus of each side. They extend about two-thirds up the posterior vaginal wall, and encircle the posterior half of that canal (Thomas and Mundé).

Normally, the vagina is in a state of collapse; its anterior wall rests upon and is supported by the posterior, which in turn is supported by the muscles and other tissues of the perineal body, is pressed upward and forward against the anterior wall, in fact. The perineal body also sustains the posterior vaginal wall, preventing prolapse of it. By the support of the anterior vaginal wall the bladder is to a great degree held in place and its proper angle maintained. A proper degree of tension of the vaginal walls also aids in maintaining the uterus in its normal position. When tears of the perineum occur, it is of little importance if the laceration be through the cutaneous or subcutaneous portion of the structure, but laceration into the levatores ani at the point of junction, or even relaxation of the same, will cause subinvolution of the posterior wall, producing redundancy of tissue and prolapse either of the posterior wall alone, or, from loss of its support, the anterior wall may also prolapse, with consequent cystocele, or the uterus itself may fall from loss of support.

Causes of Lacerated Perineum.—By far the most common cause is tearing of the parts by the presenting part of the child in labor. It may arise from traumatism, such as falling astride some sharp object. Tearing of the perineum is a very common cause of prolapse of the bladder, of the rectum, or of the uterus.

Varieties of Lacerations of the Perineum.—For facility in description, we divide lacerations of the perineum into the following:

1. Slight; when extending only through the fourchet and involving possibly a very small amount of the cutaneous surface of the perineum.

2. Extensive; when it begins at the fourchet and extends through the anal sphincter.

3. Internal; when the cutaneous surface of the perineum is preserved.

4. External; when the mucous membrane of the vagina is preserved, but the laceration extends through the posterior commissure of the vulva.

5. Partial; when it involves the structures down to, but not through, the sphincter ani muscle.

6. Complete; when the laceration extends through the sphincter ani muscle.

Lacerations are also divided according to their position as central, lateral, etc.

Symptoms.—The symptoms are those apt to be occasioned by prolapse. Sometimes, in addition, there will be dragging pain in the vulvar region and leukorrhea. Incontinence of urine may be present, and when the sphincter ani is torn, the patient will not be able to retain feces.

Examination with the fingers inserted into the vaginal orifice, so that the labia are separated, will demonstrate the tear. Tell the patient to bear down, and the prolapse of either the anterior or posterior vaginal wall, if present, will at once appear.

Treatment.—The only treatment of prolapse of the vaginal walls due to laceration of the perineum that is of any avail consists in closing the laceration, and if redundancy of the vaginal walls exist, in removing enough tissue to narrow the canal sufficiently to prevent future prolapse of its walls.

Operations.—*Preparatory.*—The patient's bowels should be freely moved by magnesia sulphate, followed by an enema. All hair on the mons veneris and about the vulva should be shaved off, and the parts prepared according to the rules given in the chapter on antiseptics.

Emmet's Modified Operation for Incomplete Laceration of the Perineum.—The following is the usual method of performing this operation :

1. Separate the labia by means of the fingers, and note the greatest point of bulging of the rectocele.

2. The apex of the rectocele is seized with a tenaculum and drawn toward the patient's right side, the tenaculum being handed to an assistant. When this is done, a triangle is exposed on the left

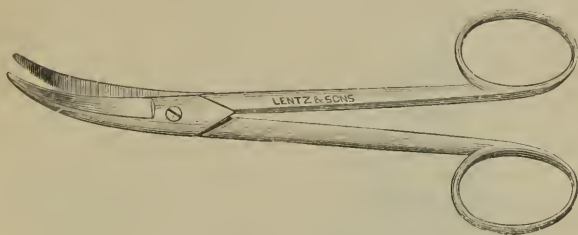


FIG. 46.—MODERATELY CURVED SCISSORS.

side of the posterior vaginal wall; the base of this triangle is the vaginal entrance, at the junction of the skin and mucous membrane; the apex is the highest point of the sulcus formed by the tear. The outer margin runs along the lateral vaginal wall, while the inner margin runs along the side of the rectocele.



FIG. 47.—TOOTH FORCEPS.

3. The apex of the triangle is fixed by a tenaculum, which is held by an assistant and the triangle marked with a scalpel.

4. When the apex of the rectocele is drawn toward the left side, a second triangle is marked on the right side of the posterior vaginal wall, and the apex of the triangle (*i.e.*, the highest point

of the sulcus on the right side) caught by a tenaculum and held as in the first instance.

5. Both triangles are then denuded by means of curved scissors from below upward, no skin being removed.

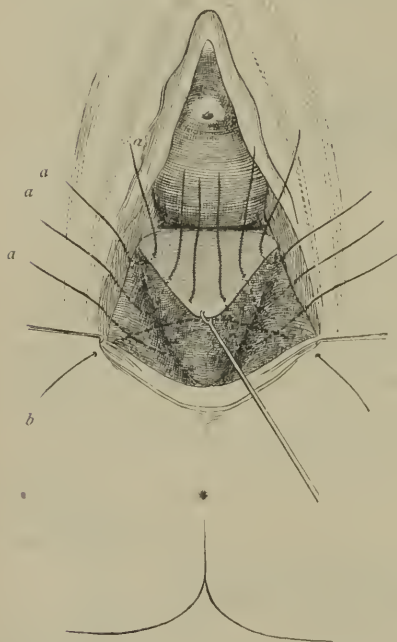


FIG. 48.—EMMET'S DENUDATION OPERATION FOR INCOMPLETE LACERATION OF PELVIC FLOOR AND PERINEUM.

a. Sutures introduced in triangles. *b.* Crown suture.

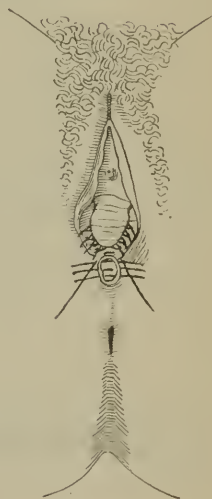


FIG. 49.—EMMET'S OPERATION FOR INCOMPLETE LACERATION OF PERINEUM. CLOSURE OF SKIN PERINEUM.

6. Each triangle is closed separately by sutures of silk, silkworm-gut, catgut, or silver wire. When silkworm-gut or silver wire is used, some operators prefer to use shot to fasten the stitch; other suture material is usually tied.

7. The sutures are introduced at intervals of about $\frac{1}{8}$ of an inch, the first being passed at the apex of the left triangle of denudation.

The second suture is introduced in the mucous membrane about $\frac{1}{8}$ of an inch from the left outer margin of the denuded area of the left side, and is passed backward, downward, and outward, so as to unite the retracted muscle-fibers, and emerges at the bottom of the sulcus. It is then reintroduced and passed forward between the mucous membrane of the rectum and the denuded surface. It is then carried upward to emerge on the edge of the mucous membrane of the rectocele beyond the area of denudation. The other stitches are introduced in the same manner. The stitches are now tied or shotted. The right triangle is closed in the same manner as the left.

8. *Closure of Skin Perineum.*—The first suture introduced to close the perineum is known as the "crown suture." The needle is introduced on the cutaneous aspect of the perineum at the anterior edge of the lateral denudation. It passes outside the denuded area and emerges within the denuded portion at the edge of the mucous membrane of the vaginal wall, immediately below the last suture of the sulcus (at the base of the triangle). It is then passed so as to transfix the rectocele beneath the mucous membrane and across the lateral denudation to the opposite side.

Hegar's Method for Posterior Colporrhaphy.—Denude a triangular flap, the summit at the crest of the rectocele, the angles of the base at the lateral margins of the remains of the hymen, and pass the sutures either across, entering slightly outside the denudation, or, as many operators advise, using a continuous catgut suture. Various operators have devised many forms of denudation operations.

Complete Laceration.—Laceration of the sphincter ani muscle. In operations for the cure of complete lacerations the objects in view are, first, restoration of the sphincter ani muscle as near as possible to its original power; second, the closing of the rectal opening, and, third, restoration of the perineal body. An operation for complete laceration can be done in the following manner: Two lateral triangles, each representing half of the perineal body, are denuded, one on each side, as in Emmet's

operation for partial rupture, but in the operation for complete

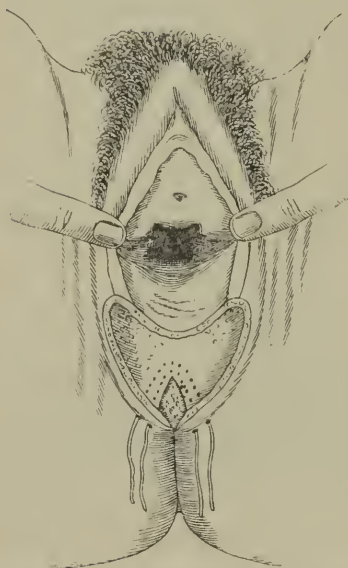


FIG. 50.—SURFACE DENUDED IN COMPLETE PERINEAL RUPTURE, AND FIRST TWO SUTURES FOR UNITING TORN ENDS OF SPHINCTER ANI IN POSITION.

laceration the line of denudation is prolonged backward along the edge of the rectovaginal septum. The guide for this lower denudation is the border of the rectal mucous membrane at the extremities of the torn muscle, as far as the upper end of the rent in the bowel. By the denudation of the rectovaginal septum the torn ends (*i. e.*, the two lateral borders of the rectal tear) of the sphincter are vivified and made capable of adhesion after the process of healing is complete. The rule for passing the first suture consists in the introduction of the needle as low down as the lower edge of the anus. From this point it passes through the rectovaginal septum, completely encircling the rectal rent, emerging on

the opposite side by the side of the lower edge of the anus, thus closing the anal opening in somewhat the same manner as a purse-string does a purse. The upper apices of the triangles which extend into the vagina are closed as in Emmet's operation for incomplete laceration.

The Tait-Saenger or Flap-splitting Operation for Lacerated Perineum.—The description of this operation is taken from Thomas and Mundé's text-book of gynecology. The patient being placed, after the usual preparation, in the lithotomy position, the rectovaginal septum is split by means of a pair of sharp-pointed scissors from side to side, beginning in the median

line. If, now, the laceration is a complete one, the incision is carried up on either side of the upper border of the perineal cicatrix, the depth of the wound upward being not more than from $\frac{1}{4}$ to $\frac{1}{2}$ of an inch. The upper or vaginal flap is then drawn upward by means of a tenaculum or forceps, the lower or rectal flap downward by similar means, and the sutures are then passed, carefully concealed throughout, from the left side of the patient to

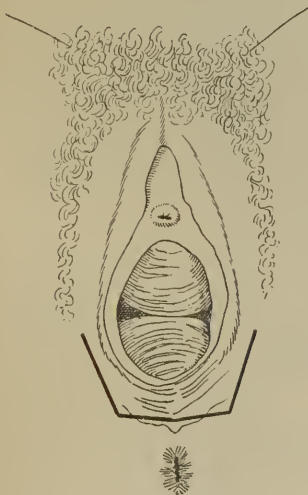


FIG. 51.—FLAP-SPLITTING OPERATION FOR INCOMPLETE LACERATION OF THE PERINEUM, LINES OF INCISION.

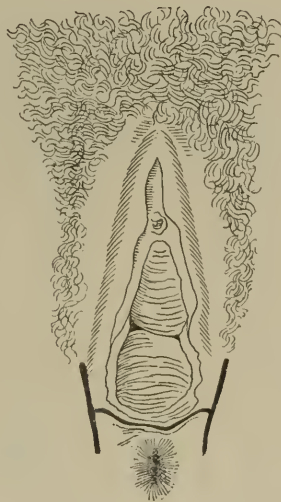


FIG. 52.—FLAP-SPLITTING OPERATION FOR COMPLETE LACERATION OF THE PERINEUM, LINES OF INCISION.

the right, beginning at the point nearest the anus, a straight or very slightly curved needle being used.

The sutures should be introduced just outside the edge of the wound, emerging at the same spot on the other side.* All the sutures being introduced, they are tied, and any puckering of the

* According to Tait's original operation, the sutures were entered just within the wound.

posterior vaginal commissure is corrected by short, interrupted catgut sutures.

The operation for complete laceration differs only in that, on either side of the transverse incision which splits the rectovaginal septum, a downward and outward incision is carried just beyond

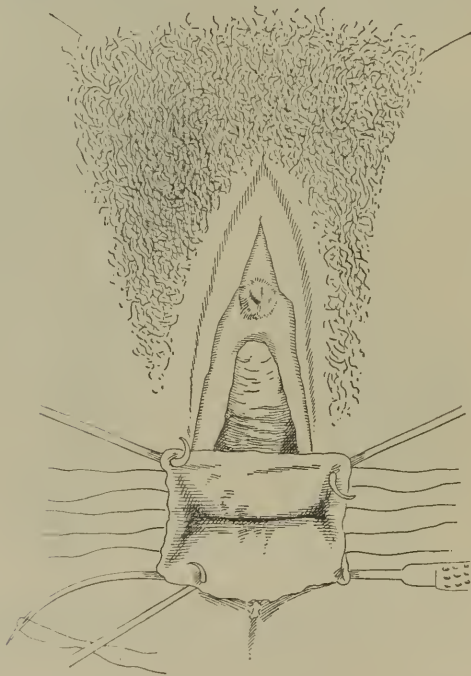


FIG. 53.—FLAP-SPLITTING OPERATION FOR LACERATED PERINEUM—APPEARANCE OF WOUND AND INTRODUCTION OF SUTURES.

the edges of the separated sphincter ani muscle. The flaps are held apart upward and downward, and the first suture, beginning from behind, is inserted just outside and below the edge of the torn sphincter ani and brought out exactly at the same spot on the opposite side. The other stitches are the same as in the operation for incomplete laceration.

Régime of Patients Before and After Perineal Operations.—Before operation the patient should be fed upon animal food and broths principally, with potatoes or wheat foods. During this time it is of great importance that the bowels be completely evacuated twice a day for at least a week. For this purpose a compound cathartic pill, or a compound rhubarb pill, two or three times a day, will be found of use. After the operation animal broths alone should be taken as nourishment. Milk, which creates scybala in the intestines, should be avoided. For two or three days after the operation the bowels should be kept locked up; after that time they may be opened by a mild laxative. Where it is necessary to give enemata after the operation, the rectal tube used should be of small size and passed by the physician himself. It should be carefully passed backward, so as not to tear open the recently united rectovaginal septum.

INFLAMMATION OF THE VAGINA (VAGINITIS).

Vaginitis may be divided into simple, gonorrheal, granular, adhesive, emphysematous, vesicular, and cystic.

Causes.—*Predisposing.*—Disordered states of the general system, such as anemia, chlorosis; systemic conditions producing pelvic congestions, such as pregnancy, abdominal tumors, cardiac or pulmonary diseases.

Exciting.—Friction produced by foreign bodies such as pessaries, irritating discharges from the uterus, injections of irritating substances, masturbation, parasites, and coition, excessive or in unnatural positions.

Pathology.—In simple and gonorrheal, in the acute stage, redness and hyperemia of the vaginal canal, with swelling of the papillæ; secretion at first serous, quickly becoming purulent; an infiltration of small cells of the epithelial structures takes place, accompanied by some exfoliation of cells. If the disease continues, the infiltration and exfoliation may extend to the deeper layers. In severe cases, particularly acute attacks, in the course of chronic inflammation, in the hyperemia of pregnancy, etc., the papillæ undergo the same changes, but to a greater degree.

GRANULAR VAGINITIS.—This consists of an exfoliation of the

epithelium, the enlarged papillæ resembling a mass of granulations.

ADHESIVE VAGINITIS occurs in children and in old age. The papillæ are smaller and the epithelial layer thinner. The inflam-

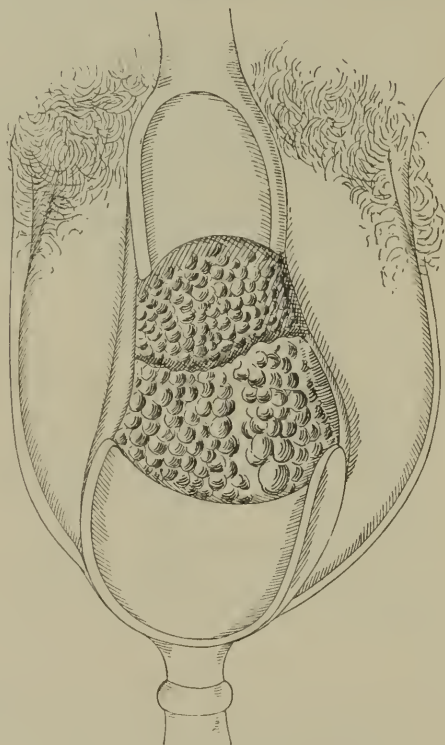


FIG. 54.—GRANULAR VAGINITIS.

mation occurs most frequently in patches. These patches are characterized by a smooth surface, scanty secretion, and, later, an exfoliation of their epithelium occurs, producing a number of raw surfaces which may adhere when the vaginal walls are in contact. Ecchymotic spots are frequently seen.

EMPHYSEMATOUS VAGINITIS occurs mostly in pregnant women. The inflammation is attended with the development of gas in the connective tissue and lymphatics of the upper end of the vagina. May be accompanied by desquamation and ulceration.

VESICULAR VAGINITIS.—Small vesicles form in the inflamed spaces; these open and leave a sharply defined edge of raw surface.

FOLLICULAR VAGINITIS occurs in the upper part of the vagina about the fornices; it consists of inflamed and enlarged follicles.

According to many modern authors, vaginitis is regarded more in the nature of a dermatitis than an inflammation of a true mucous membrane, the vaginal membrane being regarded as being in structure more like skin than mucous membrane, except at its upper part, where it assumes more nearly the latter character.

Symptoms.—Bearing-down sensations in the vagina, followed by a desire to urinate frequently. Itching and burning pain about the vaginal entrance. Backache and sensation of weight in the pelvis. Some rise of temperature. Loss of appetite, nausea, and hysteric symptoms sometimes present themselves. In chronic cases the symptoms are much the same, but are less prominent. The gonorrheal form may be followed by extension of the inflammation into the uterus, tubes, or ovaries, and is *very apt* to be followed by urethritis or cystitis.

The **diagnosis** of vaginitis can be made from the pathology. The gonorrheal form is often serious in its consequences; it differs from other forms—

1. In its acute and pronounced onset.
2. In the greenish or greenish-yellow discharge.
3. The probable presence of gonococci upon microscopic examination.
4. Occasional presence of gonorrheal warts or buboes.
5. Is frequently followed or accompanied by urethritis or cystitis.

Treatment.—In the acute simple form, quiet, not necessarily in bed; restricted diet. For the itching, warm, alkaline sitz-baths and irrigation of the vagina with hot water containing a saline solution, one-half to one per cent.; borax, one dram to the quart;

subacetate of lead or formalin, 1 : 1500. Irrigation should always be given with the patient in the recumbent position, and should be repeated every two or three hours for fifteen minutes each time. Some authorities advise dusting the vulva with bismuth, boric acid, and tannin, or other mild powder, after each injection. If the disease has become chronic, mild antiseptic douches, such as bichlorid of mercury 1 : 3000 or creolin one dram to the quart, are advised.

In gonorrheal vaginitis the patient should be put to bed and kept on a restricted diet, alcoholic stimulants being particularly avoided. The bowels and bladder should receive proper attention. The vagina should be irrigated several times a day with hot bichlorid solution 1 : 3000, or creolin one dram to the quart. In-



FIG. 55.—GONOCOCCUS OF NEISSER.
a. Within pus-corpuscle. *b.* Outside pus-corpuscle.

sufflation with iodoform), followed by the insertion of a tampon containing iodoform and chloral, each one part, glycerin four parts, is recommended by some writers.

Adhesive vaginitis of senile type may be treated by mild antiseptic douches, followed by the insertion of strips of lint soaked in a five per cent. carbolized oil or zinc oxid ointment of similar strength. In very sensitive cases the lint strips may be smeared with cold cream or almond oil. When the disease occurs in children, dilatation has in some cases been practised with success when adhesion of the vaginal walls has taken place.

The treatment of *cystic vaginitis* consists in puncturing the small cysts about the cervix, and after evacuating their contents, applying tincture of iodine. Vaginal douches of bichlorid of mercury 1 : 2000 or creolin should be used twice a day.

MALIGNANT NEOPLASMS OF THE VAGINA.

The vagina may be the seat of sarcomata and carcinomata in any form. The disease may occur either primarily or secondarily; the former, however, is rare. Sarcoma appears either as a rounded, circumscribed tumor originating from the submucous tissue, or a more superficial, diffused, degenerative change in the vaginal tissue. It appears most commonly in the posterior vaginal wall. Primary cancer of the vagina appears either as papillary epithelioma, the most frequent, or as diffuse carcinoma, infiltrating the vaginal wall generally. This latter form is very rare.

Vaginal cancer presents the same microscopic appearances as in other places, and the diagnosis must in many cases be made by this means.

Symptoms.—Cancer appears usually in persons at or past the period of middle age—from thirty to forty-five years. The important symptoms are: hemorrhage, often appearing during coition or while straining at stool, the peculiar watery discharge containing shreds of reddish tissue and foul-smelling; pain always present, but subject to paroxysms. When the disease has progressed for some time, symptoms arising from obstruction and stenosis may appear.

Treatment.—The diseased tissue should be removed as completely as possible, either with a sharp curet, the galvanocautery, or corrosives. Equal parts of pepsin and salicylic acid, either in suppositories or dry powder, should be applied to the ulcer and held in place by means of a tampon. As this application is irritating, the surrounding parts should be protected by zinc ointment or cosmolin.

When there is considerable hemorrhage, tampons of gauze dipped in a saturated solution of alum, or cotton dipped in Monsel's solution and dried, are recommended. Suppositories of chloral and tannic acid are of use. Douches of hydrogen peroxid or permanganate of potash are useful to do away with the fetor. For the pain, opium in various forms.

FIBROMATA AND LIPOMATA.

The former are occasionally found; the latter are very rare.



FIG. 56.—LOCATION OF VARIOUS FORMS OF FISTULÆ.

1. Vesico-uterine. 2. Vesico-uterovaginal. 3. Vesico-vaginal. 4. Urethrovaginal. 5. Rectovaginal. 6. Rectolabial. 7. Fistula in ano.—(Thomas and Mundé.)

When fibrous tumors appear in the vagina, they are usually in the form of fibromyomata. They may be either situated in the vaginal walls or connected with them by a pedicle. They resemble cysts, except that they are non-elastic and contain no fluid.

Treatment.—When growing in the vaginal wall, they should be enucleated and the walls closed by sutures. Polypoid growths should be

incised, and the pedicle ligated or treated with the cautery.

GENITAL FISTULÆ.

Definition.—Genital fistulæ are abnormal avenues of fecal or urinary discharge, by means of which some portion of the urinary tract or the bowel communicates with the genital tract or the exterior of the body ("American Text-book of Gynecology").

Varieties.—Vesicovaginal, urethrovaginal, ureterovaginal, vesico-uterine, uretero-uterine, and vesico-uterovaginal. Of these, the most common is the vesicovaginal.

FECAL FISTULA.

Rectovaginal and rectolabial. The former is the more common.

Causes.—By far the most common cause is sloughing due to necrosis of the tissues, produced by long-continued pressure during labor. It may be caused by forceps or craniotomy. Pessaries may be a cause. The vaginal walls may also be eaten through by ulcerations, abscesses, cancer, or syphilis, etc.

Symptoms of Vesicovaginal Fistulæ.

—A constant dribbling of urine when the patient walks about. Frequently a urinous odor can be detected. Later, inflammation of the external genital organs takes place. Phosphatic concretions are apt to form in the lower part of the vagina. Erosions and adhesions of the vaginal walls may occur.

Diagnosis.—Place the patient in the Sims position and draw down the posterior vaginal wall by means of a Sims speculum, and the fistula may appear to view. If this fails, distend the bladder by means of a catheter, tube, and funnel, with some antiseptic colored fluid, such as creolin one dram to the quart. If a fistula is present the solution will, of course, find an exit by this means. The diagnosis should be verified by inserting a probe through the fistula.

Treatment of Vesicovaginal Fistula.—When erosions

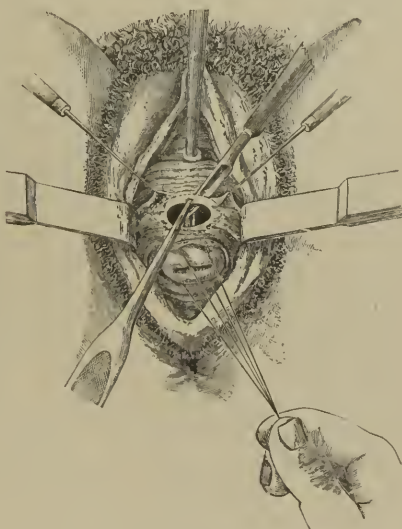


FIG. 57.—OPERATION FOR VESICOVAGINAL FISTULA. VIVIFYING EDGES OF FISTULA.

and phosphatic concretions exist, the vagina should be irrigated with douches of weak boric acid solution, about one dram to the quart. Erosions should be touched with a solution of silver nitrate, gr. v-x to the ounce. Contractions of the vagina due to scar-tissue should be removed by dividing the latter so as to amply expose the fistula.

Operations for the cure of vesicovaginal fistula should be done as follows:

Denudation Operation.—The patient should be in the lithotomy position, the thighs well flexed, the buttocks resting on a perineal pad. The posterior wall of the vagina is then retracted by a Sims speculum. The first step in the operation consists in marking with a sharp knife the outer limit of the area around the fistulous

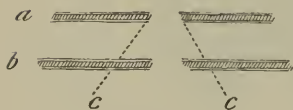


FIG. 58.—SHOWING BEVELING OF EDGES.

a. Vesical border. *b.* Vaginal border. *c.* Incision.

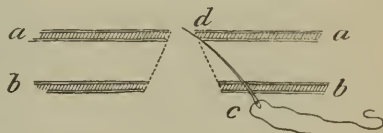


FIG. 59.—COURSE OF THE NEEDLE.

a, a. Vesical border. *b, b.* Vaginal border. *c.* Point of entrance of needle. *d.* Point of exit of needle.

opening to be denuded. This should be from $\frac{1}{4}$ to $\frac{1}{8}$ of an inch from the edge of the fistula. A piece of the tissue thus outlined is then caught with a tenaculum or a pair of long rat-tooth forceps, and lifted slightly. The piece of tissue is then denuded with a knife or curved scissors down to the mucous membrane of the bladder, which latter is not disturbed. It is generally recommended that the denudation be beveled from the vaginal opening inward toward the bladder.

The sutures should be carried by means of a small, curved needle. The first may be placed at either end or in the end of the opening.

It is now customary to use two sorts of sutures: silkworm-gut for the deep sutures and fine silk or catgut for the superficial. Silver wire is used occasionally for suturing material. The silk-

worm-gut sutures should enter the vaginal mucous membrane from $\frac{1}{8}$ to $\frac{1}{16}$ of an inch from the edge of the denudation, and come out at the margin of, but should not pierce, the mucous membrane of the bladder, then reenter at the margin on the opposite side of the fistula, and come out finally on the vaginal mucosa at a point corresponding with the point of entrance (see Fig. 59). Five or six similar sutures to the inch should be inserted. The silkworm-gut sutures should then be tied, care being taken to avoid strangulation of the tissues by tying them too tightly. Any pouting of the tissues after tying the deep sutures can be avoided by approximating the edges with the fine silk sutures. The vesical mucous membrane should never be pierced by the needle, as the point of puncture may become the seat of a subsequent fistula. In circular fistulæ it is best to draw the upper border of the vaginal tissue down to the lower. In long oblique fistulæ the walls should be approximated in the direction of their long axes. In circular fistulæ it is often necessary to cut out a V-shaped piece at each end of the fistula, to aid in accurate approximation. The patient should be kept in bed until the fistula heals. For the first three days the patient should be catheterized about every three hours; after this time she may void urine voluntarily. The vagina should be lightly packed with gauze. Some operators prefer to leave a self-retaining catheter in the bladder in order that the latter may be kept constantly empty. Opium should be given if there is much pain. The bowels should be moved by an enema on the third day.

Blasius' Flap-splitting Operation.—In this operation an incision is made parallel to the vaginal and vesical mucous membrane. The incision is made on the white line of the cicatricial tissue at the edge of the fistula. The incision is carried to the depth of $\frac{1}{8}$ to $\frac{3}{8}$ of an inch, according to the thickness of the septum. If the flap is small, it is surrounded by a purse-string suture. When the sutures are secured, it will be found that the flap of vaginal mucous membrane is made to front into the vagina, while that of the mucous membrane of the bladder turns correspondingly into the bladder. The new surfaces between the flaps are brought completely together. In large fistulæ after the flap is split, the sutures are introduced in the following manner: They are inserted in a

linear direction, the needle being made to enter the raw surface of the vaginal flap at the line of incision, burying it deeply in the tissue of the septum just beyond the point of division of the limbs of the V formed by the incision (the split flap), and bringing it out on the corresponding point of the posterior limb of the same V. The needle is then threaded and withdrawn. Next, the needle is pushed in the same way through the two limbs of the V on the other side—*i. e.*, the anterior and posterior flaps. It is threaded with the same distant end of the first thread and pulled back. Repeat suture until fistula is closed (Garrigues).

URETHROVAGINAL FISTULÆ.

These usually occur in consequence of injury taking place in the course of parturition. They are found chiefly in the inner half of the urethra.

Treatment.—The operation is similar to that for vesicovaginal fistula. If the fistula is very large, it is advised that a wedge be cut out of the under part of the urethra, the fistula being included in the base of the wedge and the denuded surfaces approximated by silk sutures extending down to the mucous membrane, the sutures being close together.

VESICO-UTERINE FISTULA.

Causes.—According to Emmet, this condition is caused by laceration of the cervix extending into the bladder. The operation consists in splitting the cervix up to the fistula. The edges of the fistula are denuded, and the whole brought together as in the operation of trachelorrhaphy.

RECTOVAGINAL FISTULA.

Causes.—The most frequent causes are necrosis of tissue from pressure during childbirth; careless use of instruments during delivery; syphilis and cancer. Cancer of the cervix frequently causes fistula in the upper part of the vagina. It may also arise from incomplete union after perineal operations.

Treatment.—Three forms of operation for rectovaginal fistula are described :

1. A broad denudation extending from the sound tissue down into and around the fistula. A few deep sutures, which are to be of silkworm-gut, are passed from side to side, as in vesicovaginal fistula. The remaining sutures may be of silk. The vagina should be loosely packed with iodoform gauze. The sutures should be removed on the eighth day. Silver wire is sometimes used for sutures. When the fistula is near the vulva, some operators advise that the sphincter ani and perineum be divided up to the fistula. The latter is dissected out and the parts are then closed, as in complete laceration of the perineum.

2. By splitting the perineum and rectovaginal septum and completely separating the rectal from the vaginal portion of the fistula, followed by a separate suture of the rectum (Kelly).

3. By splitting the rectovaginal septum vertically as far as the fistula, which is then denuded, the rectovaginal septum being closed as in the operation for complete laceration (Kelly).

ANATOMY OF THE UTERUS.

The uterus is a hollow, muscular organ situated in the pelvis, between the bladder anteriorly and the rectum posteriorly. It is the organ in which the fecundated ovum is retained and developed during embryonic life, and is, at the time of parturition, the principal agent in the expulsion of the developed fetus.

Shape.—The uterus is pyriform or triangular in shape, with its apex below.

Size.—The size is variable, depending (1) on the period of life—increasing at puberty and diminishing in old age. (2) Certain physiologic or pathologic conditions, such as pregnancy, menstruation, endometritis, etc. The average length of the uterus is three inches, its width two inches, and its thickness one inch.

Divisions.—The uterus is divided into the fundus, body, and

cervix. The fundus is the upper surface or top of the organ between the attachments of the oviducts. The body, or corpus, consists of that portion between the internal os and the entrance of the oviducts. The cervix, or neck, consists of the inferior and narrowed portion between the internal and external os. The cervix is nearly as long as the body and consists of—

1. The infravaginal portion, extending into the vagina.
2. The supravaginal portion, above the vaginal insertion.

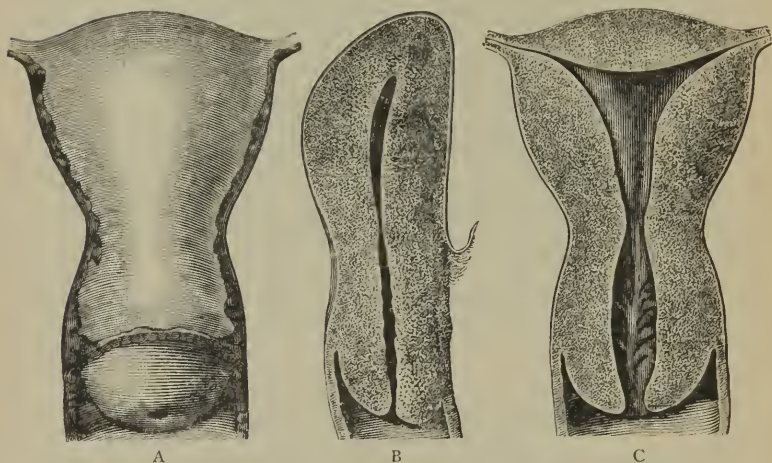


FIG. 60.—VIRGIN UTERUS.

A. Anterior view. B. Median section. C. Lateral section.

The cervical canal communicates with the vagina by means of the external os, and with the cavity of the uterus by the internal os.

Generally speaking, the axis of the uterus is perpendicular to the axis of the vagina, or at right angles to a line drawn from the symphysis pubis to the promontory of the sacrum. Normally, the uterus has a great range of mobility, but lies slightly ante-flexed, the os externum looking downward and backward. When a woman lies in the dorsal position, the axis should point toward the feet of the examiner. The uterus also inclines somewhat to

the left side, which brings the oviduct with its accompanying ovary nearer the symphysis on that side ; hence it is easier to feel the left ovary on examination.

Structure.—The uterus is composed of three coats : an outer serous, a middle muscular, and an inner mucous coat.

The *serous layer* is simply a continuation of the peritoneum. It covers the whole of the posterior surface and three-fourths of the anterior surface of the body of the organ.

The *muscular layer* consists of thick bundles of unstripped muscular fibers which hold in their meshes a rich supply of lymphatics, blood-vessels, and nerves.

The *mucous layer* lining the body of the organ is from $\frac{1}{20}$ to $\frac{1}{12}$ of an inch in thickness, and is composed of a single layer of ciliated columnar epithelium and a basement layer. It is firmly united to the fibrous tissue of the muscular layer. A large number of glands are found in this membrane ; some are simple, others have a bifurcated base. These glands dip down obliquely and end in the middle layer. They are known as *utricular glands*.

The mucous membrane lining the cervix is quite different ; like that of the body, it is covered with a layer of ciliated columnar epithelium, but in addition to this it is thrown into many folds, which give it a rugous appearance. The name of

arbor vitæ has been given to the collection of folds. In the cervical mucous membrane are found the Nabothian glands ; these are

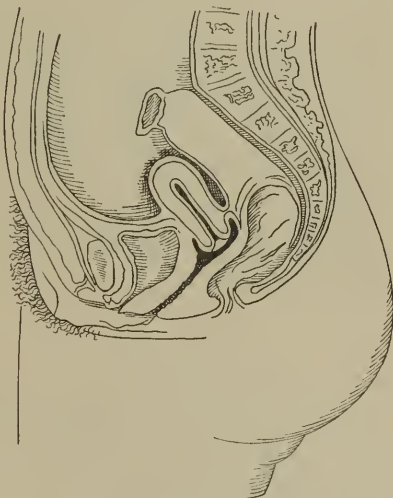


FIG. 61.—TOPOGRAPHY OF NORMAL FEMALE PELVIC ORGANS.

small glands of the racemose variety. When their ducts become occluded, they give rise to small cysts known as Nabothian cysts. The mucous membrane covering the *external surface* of the infravaginal portion of the cervix is covered with squamous epithelium and contains no glands.

Arteries.—The uterine, from the internal iliac, reaches the cervix between the layers of the broad ligament, supplies it, and forms an anastomosis in the muscular coat of the organ, uniting at the fundus with branches of the ovarian artery. The circular artery is a small branch of the uterine; it encircles the cervix and should be remembered in operations on this part of the uterus.

Veins.—The accompanying veins of the arteries; they are very large, but less tortuous than the arteries. They terminate in the uterine plexuses at the sides of the organ.

Lymphatics.—These are very numerous and increase in number during pregnancy. The lymphatics of the cervix and vagina open into the sacral and internal iliac glands, while those of the fundus and body run between the folds of the broad ligament, receive the lymphatics of the ovaries and Fallopian tubes, and, accompanying the ovarian vessels, empty into the lumbar glands.

Nerves.—The nervous supply of the uterus is derived from the third and fourth sacral, from the ovarian and hypogastric plexuses of the sympathetic.

DISEASES OF THE UTERUS.

The various affections of the uterus may, for convenience, be grouped under three heads: Deviations from the normal, (1) in position; (2) in function; (3) in structure.

DEVIATIONS IN POSITION.

Under normal conditions the uterus in its position between the bladder and rectum is a freely movable organ, its position changing somewhat with respiration, distention of the bladder and rectum, and slightly with the position of the entire body. It lies

lightly forward on the bladder, the body ascending when the latter organ is distended with urine and descending to a certain extent when the bladder is empty.

The factors most potent in holding the uterus in its position and at the same time contributing to its movability are five in number :

1. The uterine ligaments, which may be described as follows :

(a) The round, extending from each uterine cornu to the labia

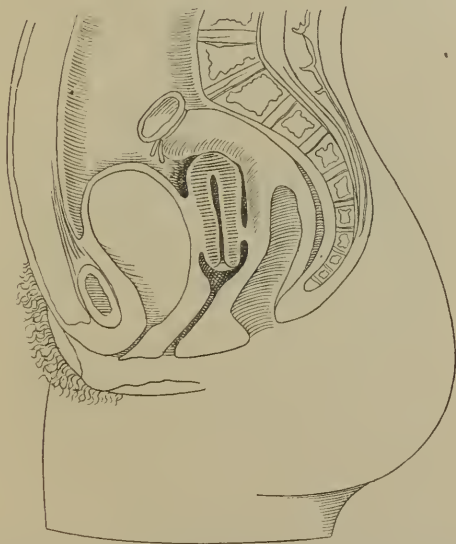


FIG. 62.—PELVIC ORGANS SHOWING POSITION OF UTERUS WITH BLADDER DISTENDED.

majora. (b) Uterovesical, bands of pelvic fascia and uterine muscular tissue, connecting the bladder with the junction between the corpus uteri and the cervix. They prevent the displacement of the cervix backward. (c) Uterosacral, prolongations of the hypogastric fascia and the uterovaginal tissue, extending from the posterior surface of the cervix, to be attached finally to the sacrum. Their tendency is to prevent a too great movement of the cervix

anteriorly. (*d*) Broad. These are folds of peritoneum inclosing areolar tissue, round ligaments, Fallopian tubes, ovaries, and blood-vessels. They prevent displacements of the uterus laterally, anteriorly, and posteriorly.

2. The retentive power of the abdominal cavity.
3. Attachments to the areolar tissue of the pelvis.

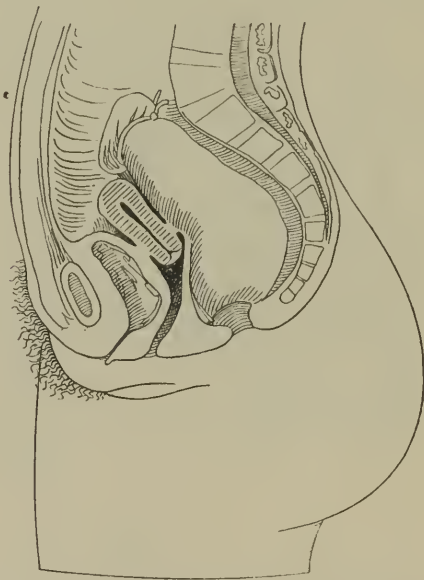


FIG. 63.—PELVIC ORGANS SHOWING POSITION OF UTERUS WITH RECTUM DISTENDED.

4. Juxtaposition of the other organs, such as bladder, rectum, etc.

5. The pelvic floor and perineum.

The action of the latter has already been described.

The normal position of the uterus may be changed by various causes, such as inflammations, tumors, relaxation of its ligaments, etc. It must be borne in mind, however, that in order to be

pathologic the changes in position must be of such a character that the free movements of the organ are interfered with, and the malposition must be permanent unless corrected subsequently by treatment. The uterus may be changed from its normal position in the following manner: It may be elevated or depressed; the entire organ may be moved forward, backward, or laterally without changing the direction of the uterine axis or any part of it; it may be bent on itself anteriorly (anteflexion) or posteriorly (retroflexion); the whole axis of the uterus may be tipped forward (anteversion) or backward (retroversion). When the entire uterus is depressed, the condition is known as prolapse.

ASCENT OF THE UTERUS.

Causes.—Any condition which causes the uterus to become too large to remain in the pelvic cavity. Among these causes are pregnancy, large fibroids, ovarian tumors with short pedicles, collections of blood or fluid, or solid tumors in the vagina. As the condition is never one of primary disease, the treatment must be directed to the cause.

ANTERIOR, POSTERIOR, AND LATERAL DISPLACEMENTS OF THE UTERUS.

The uterus may, through adhesions or tumors, be drawn *en*



FIG. 64.—ANTEFLEXION. FIG. 65.—SLIGHT DEVIATION FROM NORMAL POSITION. FIG. 66.—RETROFLEXION OF BODY.

masse forward, backward, or to either side, without changing the relation of the body with the cervix or producing alteration in the axis.

Flexions and Versions.—In a flexion the position of the body and neck (cervix) change their relation, so that their canals make an angle with each other. In other words, the uterus is bent over on itself. (See Figs. 64, 65, 66, 69.)



FIG. 67.—ANTEVERSION. FIG. 68.—RETROVERSION. FIG. 69.—RETROFLEXION.

DIAGRAM SHOWING DIFFERENCE BETWEEN NORMAL POSITION OF THE UTERUS AND ANTERIOR AND POSTERIOR DISPLACEMENTS.

The heavy lines represent the normal position of the uterus; the dotted lines the varieties of displacements, and the diagonal lines the plane of the pelvic inlet.

In a version the entire uterus (body and neck together) changes its position, the canals of the body and cervix being in a straight line. (See Figs. 67 and 68.)

ANTEFLEXION.

Definition.—Anteflexion is a condition in which the body of the uterus is bent forward on the cervix. This condition can only be called pathologic when there is rigidity at the point of flexion. The position of the flexion is usually the upper third of the cervix. Anteflexion is most common in those who have not borne children.

Varieties.—1. Corporeal; the position of the cervix is normal, but the body is flexed.

2. Cervical; the position of the body is normal, but the cervix is flexed.

3. Cervicocorporeal; both body and cervix are flexed.

4. Retroposition with anteflexion; the cervix is flexed upward and the body forward, while the whole uterus is tipped backward on its longitudinal axis as though it swung on a horizontal pivot (Thomas and Mundé). This form is usually congenital. (See Fig. 71.)

Causes.—Anteflexion may be congenital or acquired. In the latter the most common causes are—

1. Inflammatory conditions in the uterosacral ligaments, producing cicatricial tissue, which later contracts and draws the upper portion of the cervix upward and backward, the fundus at the same time being thrown forward.
2. Bandl ascribes as a cause the extension of cervical catarrh,



FIG. 70.—ANTEFLEXION OF THE UTERUS.

first to the true cervical tissue, and, later, involving the cellular tissue of the uterosacral ligaments.

3. Adhesions resulting from parametritis or peritonitis.
4. Inflammation occurring at the site of a recently attached placenta. Metritis occurring in a flexible uterus may be a cause.
5. Tumors, such as fibromata, may by their weight produce anteflexion.
6. In a number of cases version precedes flexion, and the latter

is caused by an exaggeration of the cause of the former (Montgomery).

Symptoms.—In some cases the condition exists for a consid-



FIG. 71.—RETROPOSITION WITH ANTEFLEXION.

erable time without any symptoms. The most marked symptoms, however, in a majority of cases are—

1. Dysmenorrhea.
2. Sterility.
3. Leukorrhea.
4. Menorrhagia.
5. Symptoms due to inflammation of the uterus itself.

There may also be symptoms due to disarrangement of the functions of the bladder and accompanying cystitis.

Dysmenorrhea.—The pain usually makes its appearance with or a few hours before the menstrual flow, and continues until the

latter ceases. In some cases the appearance of the flow affords partial relief from pain. The pain is generally felt in the small of the back, in the lower part of the pelvis, behind the pubes, down the thighs, and on top of the head. Many patients complain of a bearing-down sensation, much like the beginning of labor. Some patients have a morbid and invincible aversion to walking, partly arising from physical and partly from mental causes (Thomas and Mundé). The menstrual blood is frequently clotted, and the flow is followed in a few days by an irritating, milky discharge (leukorrhea).

Sterility.—This may be due to stenosis or occlusion of the cervical canal caused by the flexion. In cases of congenital flexion it is frequently caused by the infantile and undeveloped condition of the uterus itself.

Long-continued ante flexion may produce degenerative changes in the endometrium, which thus fails to form the proper nidus for the growing ovum. Urination is apt to be increased in frequency when the patient is standing. Lying down causes the excessive frequency to disappear.

Method of Examination for Ante flexion.—The patient should be in the dorsosacral position; her bowels and bladder should be empty. The physician should cleanse his hands according to the directions before given. On vaginal examination the cervix is found somewhat higher than normally, the os frequently pointing forward and downward. In the anterior vaginal culdesac a protuberance will be felt about at a point corresponding to the position of the internal os. This tumor is continuous with the intravaginal portion of the cervix and is the fundus uteri. In severe cases of flexion a sharp angle can be often detected at the point of junction of the corpus uteri with the cervix. Bimanual examination will show the size of the uterine body, its degree of sensitiveness, and its movability. Frequently, unless adhesions exist, the body can be straightened by this means. The internal hand should note the presence of adhesions drawing the cervix backward and upward into the posterior culdesac. Note if moving the cervix causes pain, particularly if it is drawn downward. If pain is present during this manipulation, it usually marks the presence of inflammation of the uterosacral ligaments.

Rectal examination, which in these conditions is of great value, shows a small tumor on the anterior wall of the rectum, which is the intravaginal portion of the cervix. The diagnosis of the flexion can be further established by the use of a sound bent to suit. This will give information as to the size of the uterus, and of its cavity, the presence of obstructions and the sensitiveness of the endometrium. Great care, however, must be taken in the use of this instrument. It must be absolutely clean and no acute inflammatory condition of the uterus or appendages exist. It is often well to steady the cervix with a volsellum or tenaculum while introducing the sound.

Differential Diagnosis.

From Tumors on Anterior Wall and Old Inflammatory Deposits; from Fibromata or Fibromyomata of the Anterior Wall of the Uterus.—When the fibroid is situated on the anterior uterine wall, the fundus can sometimes be marked out by bimanual examination, extending above and behind the tumor. A sound passed into the uterine cavity passes not into the tumor, but behind it. Fibroids of the posterior wall can generally be outlined through the rectum. In ante flexion the fundus can be included between the internal and external hand, and the sound enters the tumor when bent to the proper angle.

From Inflammatory Deposit in Front of the Cervix.—Bimanual examination will show the fundus elsewhere. Usually with ante flexion there is little or no tenderness. When an inflammatory deposit exists, *considerable* tenderness is present, the fundus can not be found in any other position, and there is apt to be more or less fixation of the uterus. In this class of cases the sound as a means of diagnosis had best be omitted.

ANTEVERSION.

Definition.—In anteversion the uterus inclines forward; its axis is straightened in such a manner that the normal bend forward is lost. The cervix is higher and points directly backward against the posterior vaginal wall or into Douglas' culdesac or toward the hollow of the sacrum. In this condition the uterus is generally enlarged, hard, and more or less fixed by adhesions. It may be,

however, freely movable. Like ante flexion, in order to be pathologic, the anteversion must be a permanent condition.

Causes.—The most frequent cause of anteversion is structural changes in the uterine tissue following abortion or confinement, where subinvolution has taken place from slight infection. The large, softened uterus tilts forward and becomes fixed by bands of adhesion. Other predisposing causes may be mentioned, such as

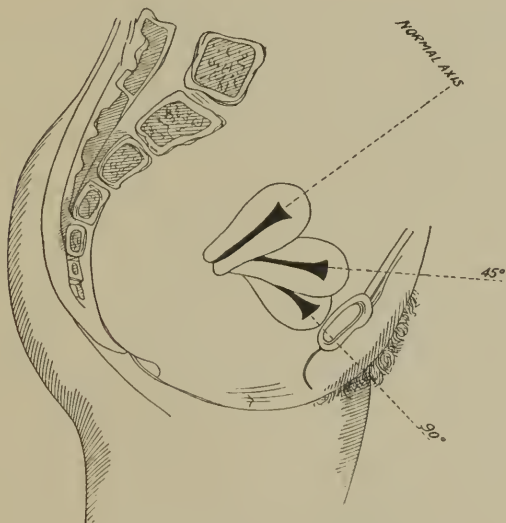


FIG. 72.—DEGREES OF ANTEVERSION.

lack of general muscular tone, particularly of the abdominal walls. Among the principal exciting causes are congestions, hypertrophy or hyperplasia, fibroids and other tumors on the posterior wall, pregnancy, lacerated perineum, tight clothing, relaxation of the uterine ligaments, loss of the retentive power of the abdomen, prolapse of the vagina, etc.

Symptoms.—In the majority of cases no symptoms that can be directly ascribed to the anteversion are present. As the condi-

tion is most frequently produced by metritis, parametritis, or cellulitis, the symptoms are those of these conditions. Dysmenorrhea and sterility are frequently present. The pressure of the fundus uteri on the bladder may cause irritation of that viscus, sometimes amounting to cystitis. Frequent micturition occurs. Pressure of the cervix against the rectum may occasionally produce tenesmus. In chronic cases catarrh and erosion of the cervix are generally present.

Diagnosis.—Upon vaginal examination the cervix is found pointing directly backward, the os being directed toward the hollow of the sacrum. Through the anterior vaginal wall a round, more or less firm body can be felt at the point of junction of the uterine body and neck. The uterus is generally enlarged; and in true anteversion is more or less fixed. No angle, as in ante-flexion, can be felt.

Bimanual Examination.—By this means of diagnosis the tumor in front of the cervix, which is included between the internal and external hands, is the uterine body. The amount of fixation and movability can also be ascertained. Rectal examination demonstrates the presence of a slight protuberance on the anterior wall, which proves to be the cervix.

Treatment of Anterior Displacements.—Many cases of simple antedisplacement require no treatment. When the displacement is secondary, the primary cause should be sought for and treated. When unpleasant symptoms are produced, the uterus should be replaced. Occasionally, after emptying the bladder, the uterine fundus can be grasped through the abdominal wall and raised on two fingers; one hand placed in the vagina may raise the fundus, while the cervix is drawn forward and downward by means of a tenaculum. In some cases the sound has been recommended as a means of replacement, but many operators consider it dangerous. When adhesions bind the uterus in position the fundus should be gradually raised by two or three fingers placed in the vagina, the cervix at the same time being drawn gradually forward. Tampons should be inserted so as to gently force the cervix forward. This treatment may be repeated until the adhesions are either broken up or sufficiently stretched to allow the uterus to be permanently held in place by a

pessary. Many cases of simple anteversion can be relieved by an abdominal binder.

When the displacement is due to an inflammatory condition, this must be treated by copious vaginal irrigations of hot water, the douches being best given from a large fountain syringe or other apparatus of the same description. The patient should be in the dorsal position, with hips somewhat raised. After each irrigation the vagina should be dried and iodine applied to the fornices. Pelvic congestion should be relieved by tampons of boric acid and glycerin, either alone or combined with ichthyol. The bowels should be kept open by the administration of sulphate of magnesia or other saline. When the ante-position is the result of subinvolution, after all inflammatory symptoms have subsided the cervix should be dilated by graduated solid or parallel dilators and the cavity gently but thoroughly curetted. This operation should be done under the most strict antiseptic precautions, and as follows :

1. The uterine cavity may be washed out with a hot boric acid solution.



FIG. 73.—DOUCHE CURET.



FIG. 74.—THOMAS' ANTEVERSION PESSARY IN POSITION.

2. All traces of the diseased endometrium should be removed with a sharp curet. For this purpose an instrument which will remove the endometrium and at the same time carry a stream of antiseptic fluid into the cavity, thus to aid in washing away the removed membrane, will be found of value. Such an instrument is known as a douche curet.

3. After cureting, the uterine cavity should be again washed out and packed rather tightly with iodoform gauze. The vagina should be lightly tamponed with sterile gauze, and the dressing secured by a pad and T-bandage. The packing must be removed about the third day; some operators, however, let it remain as long as six days. The patient should be allowed out of bed about the fourth day. In cases of ante flexion with retroversion the canal should be cautiously dilated and the endometrium removed and the uterus packed in the same manner as before mentioned. Some operators insert a light gauze drain just through the internal os after the packing has been removed.

Sims' Discission of the Posterior Lip.—This operation is used in cases of ante flexion which resist other methods of treatment. It is done as follows:

Sims' position is used. The cervix being exposed by means of a speculum, the posterior lip of the cervix is cut in the median line as far as the vaginal junction. A second incision is carried in a straight line from the internal os to the upper end of the first incision. The wound is packed with iodoform gauze, which is kept in place as long as there is danger of hemorrhage. The packing should be changed as often as needed.

Dudley's Operation.—The uterus is exposed by a Sims speculum, the cervix dilated, and the whole organ curetted and disinfected. The posterior lip is divided with scissors somewhat past the utero-vaginal junction. The incised surfaces are now separated with tenacula, and the incision deepened on the side toward the cervical canal. Each side of the incised surface is now folded upon itself from before backward, and secured by silkworm-gut sutures. By this means the external os is carried directly back to the angle of incision. The anterior lip of the cervix is now partly removed, the suture extending to the external os, but not into the canal.

This incised surface is folded upon itself from side to side and secured with deep sutures (Garrigues).

Pessaries.—The chief object to be attained in the use of pessaries in anterior displacements is to make gentle pressure on the base of the bladder above the junction of the cervix and the body of the uterus, as near the fundus as possible, to supplement the vesico-uterine ligaments (Thomas and Mundé). Before a pessary can be safely used, all inflammatory symptoms must have been



FIG. 75.—GRAILY HEWITT'S ANTEVERSION PESSARY.

absent for some time, the uterus must have been replaced and be freely movable. The bowels must be thoroughly emptied and the bladder contain no urine. Many pessaries have been used in the treatment of anterior displacements. The simple ring of soft rubber which is drawn together when inserting, the Smith-Hodge, Thomas, Graily Hewitt, have their advocates. The Thomas pessary is inserted open and then fixed in position, as shown in figure 74.

The pessary should be carefully fitted and removed for inspection at the end of three or four days. If any erosion or marking of the vagina is found, the instrument should be refitted. The vagina should frequently be well irrigated with hot water. After the pessary has been perfectly fitted, it need only be removed and examined about once a month. Cases of anterior displacement in which the cervix is abnormally long may be treated by amputating the cervix. After removal of a portion of the cervix, considerable atrophy of the remainder of the organ takes place. When the displacement is due to downward traction caused by a lacerated perineum, the latter should be repaired by one of the operations before described. Downward pressure from above should be relieved by having the patient wear her corsets loose and her skirts suspended from the shoulders, thus relieving abdominal pressure to a certain extent.

POSTERIOR DISPLACEMENTS (RETROFLEXION).

In retroflexion of the uterus the fundus is permanently displaced backward, the organ at the same time being flexed on its posterior surface.

Causes.—Congenital retroflexion is rare; when it does occur, it is found chiefly in sterile married or single women.

Pathology of Congenital Retroflexion.—The angle of flexion is usually quite acute, the point of flexure being at the internal os. The fundus is found plainly marked in Douglas' cul-de-sac. The whole uterus is well back in the pelvis, and is very frequently so adherent to the rectum as to make the flexion irreducible.

The cervix is normal or slightly decreased in size. Its anterior wall opposite the internal os becomes greatly thinned, while the posterior wall is thickened. No disease of the ovaries and tubes generally accompanies this form of retroflexion.

Symptoms.—Congenital retroflexion is usually accompanied by the following symptoms:

Dysmenorrhea, severe in character, the menstrual flow being scanty and clotted.

Sterility is present in nearly all cases of congenital retroflexion.

Endometritis in some form is usually present. Purulent endometritis, however, is not frequently found.

The other symptoms are backache, occipital or coronal headache, these being constant, but increased at the menstrual epochs, pelvic tenesmus, difficult and painful defecation, the stools being



FIG. 76.—RETROFLEXION.

small and often flat and thin (ribbon-like); leukorrhea is generally present.

Physical Signs.—Bimanual examination shows the fundus absent from its normal position, but detects it in the posterior culdesac. The cervix is small and points in the axis of the vagina or toward its anterior wall. The uterine canal is shortened in its total length, and the fundus may press on the rectum.

Treatment.—As in this form of retroflexion the body of the

uterus is frequently so closely adherent to the rectum as to render reduction by other means impossible, operative means are advised. An incision should be made in the posterior lip of the cervix, extending through it to above the internal os. The cervix is then dilated, and the uterine cavity curetted and well washed out.

Hemorrhage is apt to be free from cutting the circular vessels, but the bleeding can be checked by the use of tampons. The vagina should be tamponed. These may be removed in two or three days.

ACQUIRED POSTERIOR DISPLACEMENTS.

These may exist either as retroflexions or retroversions. The version very frequently precedes the flexion, the uterus becoming permanently retroflexed by an exaggeration and continuance of the primary cause of the retroversion. Acquired posterior displacements are most common in married women.

The **causes** are divided into predisposing and exciting.

Predisposing causes are a general lack of muscular tone, parturition, inactive habits.

Exciting Causes.—Any cause increasing the weight of the body of the uterus, as subinvolution, areolar hyperplasia, tumor in the fundus, especially fibroids; pregnancy.

Causes which produce a gradual drawing of the uterus from its proper place; as adhesions arising from pelvic peritonitis, rectocele, etc.

Causes which produce direct displacement backward; as tumors anterior to the fundus, blows, falls, violent muscular efforts, distended bladder, a prolonged dorsal position after confinement, especially when combined with a too tight abdominal binder.

Causes arising from relaxation of the uterine supports; as a badly lacerated pelvic floor and perineum or great relaxation of the latter.

The most frequent causes are:

1. Subinvolution, when the large flabby uterine body tends to fall backward, the cervix remaining as a fixed point.
2. A ruptured perineum.

Pathology.—Posterior displacements most frequently begin as

retroversions, and by continuance of the same cause the flexible uterus bends backward on itself at the internal os. Either retroversion or retroflexion, however, may occur as a primary condition.

Combinations of the two are described as retroversioflexio, etc. When flexion has taken place, the circulation of the uterus becomes interfered with, and congestion and enlargement of the body with hypertrophy of the endometrium follow. From increased growth of fibrous tissue, rigidity at the junction of the body and cervix takes place. There is thickening of the posterior lip of the cervix, while the anterior becomes greatly thinned. When the flexion is acute, the cervical canal may become occluded and retention of secretions occur therefrom.

Symptoms.—Dysmenorrhea; sterility or habitual abortion; menorrhagia; leukorrhea; nearly constant, dull, dragging pain in the back and down the thighs; headache, coronal or occipital in situation; constipation, with pain during defecation—the bowel movements are often flat and ribbon-like; rectal tenesmus; irritability of the bladder, sometimes with leaking of urine when the patient laughs or moves suddenly.

From the continual leukorrheal discharge, erosions of the cervix appear. Following the foregoing symptoms a whole train of nervous phenomena may occur, the patient becoming melancholic or hysteric. The symptoms produced by the displacement are frequently aggravated by endometritis, which often accompanies the condition.

The Consequences of Retrodisplacements.—When retroflexion becomes chronic, the secretions may be retained in the uterine cavity and an endometritis be set up thereby. Adhesions may be formed between the uterus and bowel; the broad ligaments may become distorted and congested. Prolapse of the ovaries and tubes may occur.

Diagnosis.—The dorsal position with the patient's thighs well flexed on the abdomen is the most convenient, although it is frequently well to verify the diagnosis by examining the patient in Sims' position. The bowels and bladder should be empty.

Vaginal Examination.—The index finger either alone or in company with the middle finger of either hand inserted into the

vagina finds the cervix lower down, the os looking further forward—that is, the point of the finger can be made to nearly or quite enter the os. In cases of marked retroversion the finger first touches the posterior lip, because of its enlarged condition. Where flexion exists, the angle between the body and cervix can be made out by gently pressing upward in Douglas' culdesac. Extending the finger along the posterior wall of the cervix, the continuation of the uterine tissue can be felt from this point extending backward in versions, or distinctly downward in flexions. A tumor, which is the body of the uterus, is felt in the posterior vaginal fornix. No tumor can be felt in the anterior vaginal fornix.

Bimanual Examination.—The disengaged hand is placed on the abdomen, pressing gently and firmly with the finger-tips. By a gentle pawing motion in the direction from the umbilicus toward the pubes, and at the same time gradually increasing the pressure, the resistance of the abdominal muscles can sometimes be overcome. The hands of the examiner should be well warmed. The uterine body will be absent from its normal place, and can not be felt between the vaginal and outer hand; the cervix, however, can be pressed between them.

Rectal Examination.—A tumor, which is the fundus uteri, can be felt on the anterior rectal wall. The tumor is higher up in retroversion than in retroflexion. When the cervix is drawn down by a tenaculum, the tumor moves,—will almost disappear if no adhesions exist. The examiner should discover as exactly as possible whether the uterus is movable enough for immediate replacement, or if it is bound by adhesions to neighboring organs.

In extreme cases the ovaries may be felt on either side of the body of the uterus.

The sound, when used as a means of diagnosis, will be found to enter the uterine cavity more easily when it is bent at somewhat of an angle in retroversions, and when curved in retroflexions.

In the latter case a point of obstruction will be found at the angle of flexion. In either case the direction is backward.

Differential Diagnosis.

From a Prolapsed Ovary or Small Ovarian Tumor.—When one or both of these are present, the uterine body will be found in front of the tumor.

An ovarian tumor is softer and more elastic than the body of the uterus.

By drawing down the cervix with a tenaculum, the body of the uterus will be found to move with the movement given the cervix.

From Feces in the Rectum.—Bimanual examination demonstrates the fundus anterior to the tumor, which has a doughy feel, unlike the hard uterine tissue. If any doubt exists, the rectum should be emptied by a purgative.

From Inflammatory Deposits in Douglas' Culdesac.—During the course of an acute inflammation this may be very difficult. The sound as a means of diagnosis must never be used in these cases. Careful examination will demonstrate the fundus uteri to be anterior to the tumor.

From a Fibroid on the Posterior Wall of the Uterus.—By bimanual examination in retrodisplacements we find the fundus absent from the normal position, while the cervix points forward and downward. The sound introduced takes a backward direction.

A fibroid on the posterior wall would push the fundus forward; the anterior direction of the uterine canal would be demonstrated by the sound; the cervix probably would have an upward and backward direction. The tumor posterior to the cervix in the posterior vaginal fornix would be more irregular than that of the uterine body.

Treatment of Posterior Displacements of the Uterus.—The treatment of posterior uterine displacements may be divided into—

1. Methods for the replacement of the diseased organ.
2. Measures used for the retention of the uterus in correct position after the malposition has been corrected.

Replacement by means of knee-chest or other positions, manipulations, either with the hands or instruments or both combined, tamponment, etc., are examples of the first. The pessary, certain forms of tamponment, operations for the removal of surplus vaginal tissue, for shortening the uterine ligaments and for directly holding the uterus in place, are examples of the second. The two methods of treatment should never be confounded.

Methods of Reduction.—Place the patient in Sims' position.

The operator standing at the patient's back should introduce the index and middle fingers of the right hand into the vagina in such a manner that the palmar surfaces of the fingers will be directed toward the rectum and pressed into the posterior vaginal vault. Attempt to raise the uterus with the back of the first finger and push the fundus forward into its normal position, keeping the middle finger in the posterior vault to maintain what space is gained. As the uterus rises, the index finger should be carried in front of the cervix, which is to be forced backward toward the sacrum. As the cervix passes backward, the middle finger is placed in front of it. After the uterus has slipped into position, the finger should be kept in the last-named position for a short time. The preceding method is applicable where the uterus is not bound down posteriorly by adhesions.

Bimanual Reposition.—Place the patient in the dorsal or half-reclining position, with knees flexed on abdomen. The bowels and bladder should be empty, and the vagina thoroughly irrigated by an antiseptic solution. The finger is introduced and passed behind the cervix, when the tip is bent so as to push the cervix toward the symphysis pubis. The free hand now makes gradually increasing firm pressure on the abdomen, following the curve of the sacrum, trying to get behind the uterine fundus and pin it forward against the symphysis. This is an attempt to fix the uterus. The vaginal hand is pressed behind the body and moved forward until it and the body are in front of the fingers of the abdominal hand. The abdominal hand now grasps the body, while the vaginal fingers are placed in front of the anterior lip of the cervix, which is pushed backward and upward toward the sacral promontory. It is sometimes of use to have the patient stand up while the cervix is held in this position, as by this manœuvre the intestines fall behind the uterus, and in conjunction with the intra-abdominal pressure aid in retaining the uterus in position.

Knee-chest Position.—This position will be found of great service. The patient having been placed in this attitude, the perineum is lifted by a Sims speculum and air admitted into the vagina. The cervix is brought into view, caught with a tenaculum, and then drawn forward toward the anterior wall of the vulva. The fundus at the same time may be pressed forward by

means of a repositor or two fingers in the posterior culdesac. In many cases as soon as the fundus has passed the sacral promontory, it will swing into position by gravity alone, without the aid of a repositor.

After reducing the retrodisplacement it is well to place a tampon anteriorly to the cervix, or the fingers may push the latter back while the patient assumes the dorsal position. By this change the intestines fall behind the uterus and help to press the latter forward. The knee-chest position is of great service in treating stout patients or those whose abdominal muscles are resistant. Rectal,

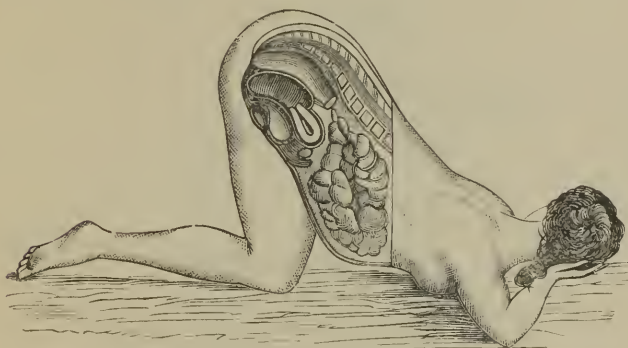


FIG. 77.—KNEE-CHEST POSITION SHOWING REPOSITION OF THE UTERUS BY GRAVITY AND PRESSURE OF AIR IN THE VAGINA.

rectovaginal, or recto-abdominal pressure may be used to aid in replacement.

Replacement by the Sound.—The vagina should be thoroughly irrigated with some suitable antiseptic fluid. The sound must be carefully sterilized just previous to using. Replacement is accomplished by bending the sound somewhat, to facilitate its introduction. After it has entered the uterus with the concave side backward, make the handle describe an arc of a circle from behind forward and lower the handle toward the perineum. The objection to this method is the danger of sepsis and perforation. The preceding manipulations are applicable to cases where the uterus is movable, not bound posteriorly by adhesions, and in

which no acute pelvic inflammation exists. No attempt should be made at replacing a uterus during an acute inflammatory attack. The attention should be confined to the relief of this condition, leaving the correction of the displacement until a later day. When the uterus is fixed in retroposition by adhesions, Brandt's method of gradual replacement is the best. The uterus should be gently

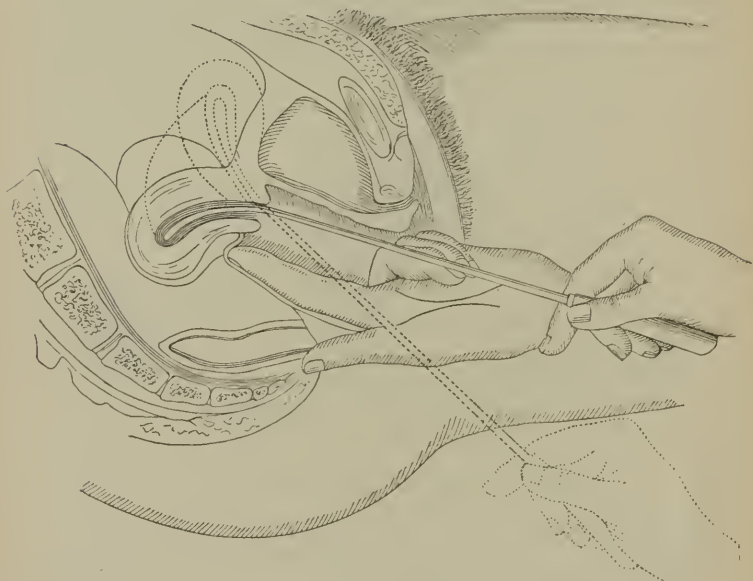


FIG. 78.—DIAGNOSIS AND REDUCTION OF RETROFLEXION BY THE SOUND.

raised by two fingers in the posterior fornix of the vagina, the pressure used being gradually increased, thereby stretching adhesions. The manipulations should be performed about every third day, each one being followed by a firm tampon of cotton or wool saturated with boroglycerin or ichthyol and glycerin.

Operative Treatment of Retrodisplacement.—In persistent cases of retrodisplacement, when all other attempts at

reduction have failed, some operative procedure must be resorted to in suitable cases.

Alexander's Operation for Shortening the Round Ligaments.—To successfully perform this operation the pelvic

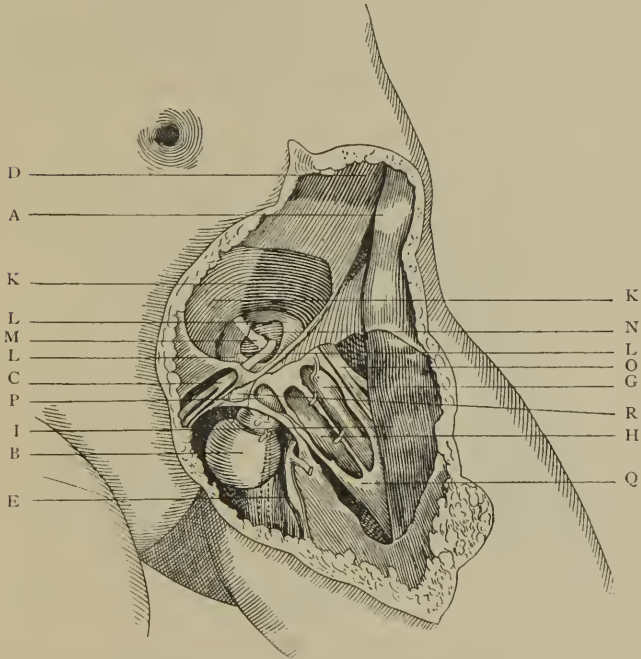


FIG. 79.—TOPOGRAPHIC ANATOMY OF THE ROUND LIGAMENT.

A. Anterior superior iliac spine. B. Crural hernia. C. Round ligament of the uterus. D. External oblique muscle. E. Saphena vein. G. Femoral artery in its sheath. H. Femoral vein in its sheath. I. Sartorius muscle. K, K. Internal oblique muscle. L, L, L. Transversalis fascia. M. Epigastric artery. N. Peritoneum. O. Anterior crural nerve. P. Hernia within the crural canal. Q. Femoral sheath. R. Gimbernat's ligament.

organs must be normal, the uterus only being in persistent retro-position, and causing discomfort after all efforts have been made at replacement. The preparations for the operation are the same as for celiotomy. The uterus must be replaced prior to the opera-

tion and held in position by a high vaginal tampon of iodoform gauze. This should be done the day before the operation. The incision is made from the spine of the pubes in the direction of the inguinal canal—that is, upward and outward. Length of incision about two inches. The external abdominal ring is now opened (care being taken not to wound any of its pillars), the guide being the tendon of the external oblique muscle, and the fascia



FIG. 80.—GASTROHYSTEROPEXY OR VENTROFIXATION.

picked up and incised down to the underlying fat, which is extracted. If the round ligament can not now be found it will be necessary to open the canal to the internal ring. Having found the ligament, it is to be caught and held with forceps and the wound protected by a temporary antiseptic dressing, while the ligament on the opposite side is sought for and caught in a similar manner. The ligaments are drawn out until they become tense and are given to an assistant to hold. Each ligament is now

united to the pillar of the ring by catgut sutures and the surplus cut off, the free ends being stitched into the external wound.

Intra-abdominal Methods for Shortening the Round Ligaments.—Various methods for shortening the round ligaments have been devised by Wylie, Baer, Mann, and others; these operations consist in opening the abdomen under strict aseptic precautions. The round ligaments are found and their inner sides scraped sufficiently to make a raw adhering surface. They are then folded on themselves and three ligatures passed so as to in-

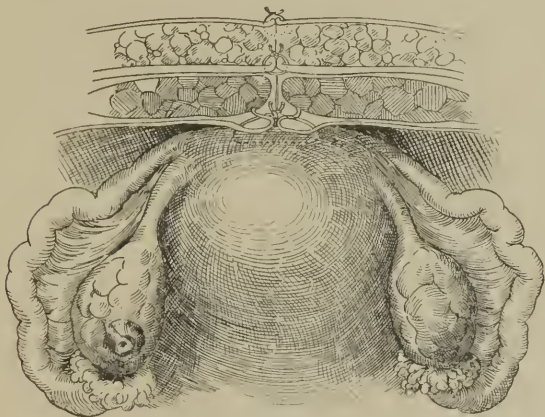


FIG. 81.—METHOD OF SUTURING THE UTERUS AND ABDOMINAL WALL AFTER HYSTERORRHAPHY.—(After Kelly.)

clude most of the ligament and at the same time bring the raw surfaces together. These operations are not generally recommended.

Hysterorrhaphy, also called Gastrohysteropexy or Ventrofixation.—The patient is to be prepared in the same manner as for celiotomy and placed in the Trendelenburg posture. The incision is made in the median line, as for celiotomy. The uterus is found, adhesions broken up, and the organ drawn up into the wound. Some operators recommend that a small spot on the posterior surface of the fundus be gently scraped, to aid adhe-

sion to the anterior abdominal wall. Two sutures of silk are introduced in such a manner as to transfix the peritoneum and subperitoneal tissues, passing next through the posterior surface of the uterine fundus, in turn transfixing the subperitoneal tissue and peritoneum of the opposite side where they emerge. The uterus is now drawn forward and the sutures tied. The sutures should penetrate the muscular tissue of the uterus to a depth of about one-eighth of an inch. Kelly advises that the abdominal incision be closed as

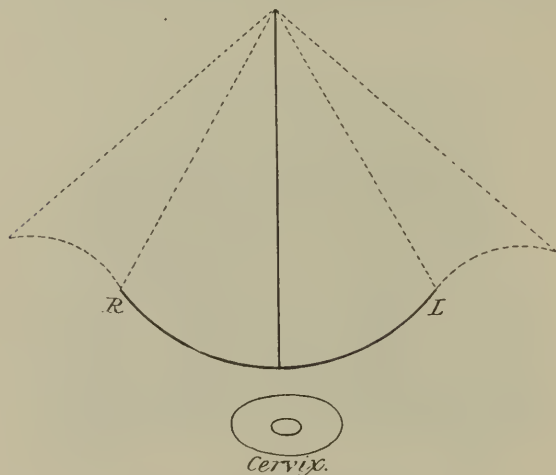


FIG. 82.—MACKENRODT'S OPERATION.

The heavy lines represent the two incisions. The dotted lines represent the flaps turned back.

follows: The peritoneum is united by a continuous catgut suture. The remainder of the abdominal wall is brought together in the usual manner, by a single buried silver-wire suture, with catgut above and below it for the fascia, or catgut may be used for uniting the fascia and skin. The latter sutures may be removed on the eighth or ninth day. The after-treatment is the same as in any other abdominal section.

Mackenrodt's Operation for Supravaginal Fixation.

—Antiseptic precautions having been observed, the patient is

placed in the dorsal position and the uterus drawn forward and downward by means of vulsellum forceps. A curved transverse incision is made just in front of the cervix; at right angles to this and in the center of the first incision, a second is made in the median line to a point just behind the urethra. The two flaps formed by these incisions are then dissected loose and turned back. By means of the finger the bladder is loosened. One or two silk sutures are then passed, first through the vaginal wall just outside the flap on one side, then through the anterior uterine wall just above the internal os, lastly through the vaginal wall on the other side. The uterus, which has previously been replaced and held in position by tampons, is drawn forward and the sutures tied. The flaps are then brought together and united by sutures of catgut or silk. Care must be taken not to injure the bladder.

Gottschalk's Operation.—The object of this operation is the shortening of the uterosacral ligaments for the cure of retrodisplacements of the uterus.

The uterus being replaced, a longitudinal incision 5 cm. in length is made in the posterior vaginal wall, about 1 cm. below its insertion into the cervix. This incision is continued down to the rectum. A silk suture is then passed through each side of the wound, these sutures being to unite the peritoneum to the vaginal tissue and to retract the wound-edges. The uterus should now be freed from any adhesions and replaced by the bimanual method. One end of a strong silk suture is threaded into a Deschamp needle, while the other end of the same suture is threaded into a flat, curved, sharp needle. While the tip of the index finger of the left hand fixes the highest part of the uterosacral ligament which can be reached through the incision, the Deschamp needle is passed through the center of the ligament at its highest point in a direction from above downward. This part of the suture is tied and the end left long, passing through the vaginal incision. The sharp needle is now inserted to a moderate depth into the posterior cervical wall at a point corresponding with the internal os. The needle is carried downward through the length of the cervix as far as the vaginal insertion. The same procedure is done on the ligament of the opposite side. The cervix is now drawn upward and backward, and the two ends of the suture are tied. A light pack-

ing of iodoform gauze is inserted in Douglas' culdesac. This packing is renewed until fixation in the normal position has taken place.

Methods for Retaining the Uterus in Position.—In many cases where the uterus is movable, not bound posteriorly by adhesions, it will, after careful replacement, be self-retaining, the pressure of the intestines and the "intra-abdominal pressure" furnishing all the necessary means of retention. As aids in the after-treatment of such cases it would be well to advise the use of an abdominal supporter, and the swinging of the skirts from the shoulders, instead of the usual method of fastening around the waist. All intense muscular efforts should be avoided. The general system should be sustained by tonics, general and local, and good food. The bowels should be carefully regulated so as to



FIG. 83.—HODGE PESSARY.



FIG. 84.—THOMAS PESSARY.

avoid all straining at stool. Where traction is made on the uterus from below by prolapse of the vaginal canal, the surplus mucous membrane should be removed by means of one of the operations already described.

The Pessary.—The pessary is an instrument designed to aid in holding the uterus in correct position. It should never be used to replace a uterus. Pessaries are usually made of hard rubber, block tin, or celluloid, and are of various designs. Those most frequently employed in retrodisplacements are the Hodge-Smith and Thomas. In retrodisplacements pessaries act by pushing up the mucous membrane of the posterior vaginal fornix, and this in turn draws the cervix upward and backward. It is necessary, in order to have the pessary do its work properly, that the uterus shall have been replaced first.

Indications for the Use of the Pessary.—The uterus must have been replaced and be freely movable. The pelvic floor must be intact. There must be no inflammatory condition in the uterus or tubes and no prolapse of the ovaries.

Contraindications.—Diseases of the uterus or appendages, vaginitis, urethritis, lacerations of the pelvic floor, cystitis, adhesions, and existing retrodisplacements.



FIG. 85.—INTRODUCTION OF PESSARY, FIRST STAGE.

Method of Introduction.—The size of the pessary must be ascertained approximately by inserting two fingers in the vagina and abducting them so as to include the distance from the posterior culdesac to the point on the anterior wall at which the pessary is to rest. The fingers should be withdrawn and the distance between them measured. The pessary may be inserted with the patient either in the Sims or dorsal position. The bowels and bladder must be empty. The pessary should be covered with some unc-

tuous substance, and should be steadied by the thumb and index finger of one hand while the perineum is somewhat depressed with the other. The broad end is introduced first and in the oblique axis of the vulva, so as to avoid pressure on the urethra. After passing the vulva, the hand holding the pessary is carried well up in front of the pubes, the pessary being carefully turned crosswise. When in front of the cervix, one of the supporting fingers should be placed against the anterior bar of the pessary, causing it to dip

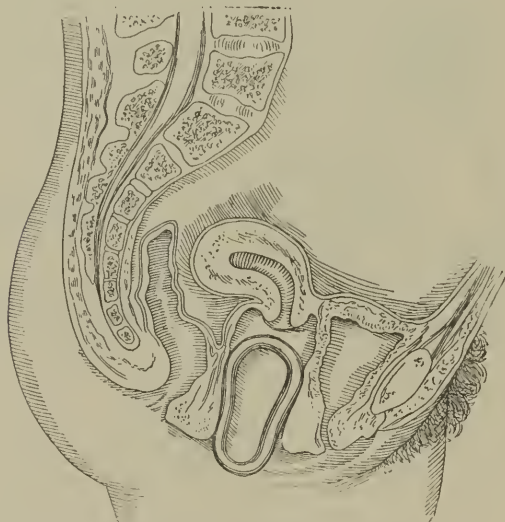


FIG. 86.—INTRODUCTION OF PESSARY, SECOND STAGE.

down, passing first beneath the cervix, then raising the posterior bar so as to pass behind it and push the posterior vaginal fornix well up.

When in position, the anterior bow of the pessary must not make pressure on the bladder, but should be curved downward and should take its support from the pubic rami. The depression in the anterior bow should be so adapted as to avoid pressure on the urethra. After the pessary is in position, the patient should be

placed in the dorsal position and one finger should be passed around the outer edge of the pessary. If this can be done easily the instrument is not too large. After fitting the pessary, it is well to have the patient stand, walk, and sit with one leg crossed over the other. If any pain is caused, the pessary should be withdrawn and refitted or another introduced. It is well also to examine the patient once or twice in standing position to see if the instrument fits well. Hard-rubber pessaries may be molded to any shape by

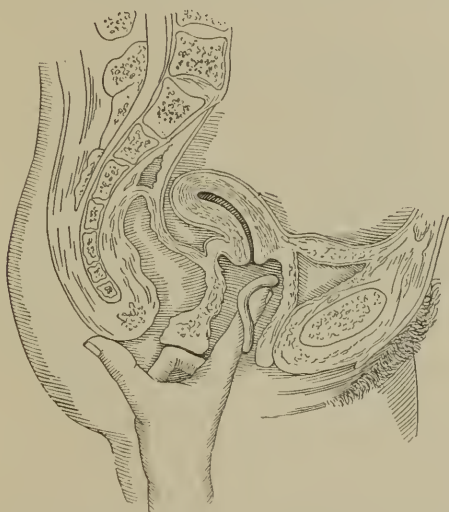


FIG. 87.—INTRODUCTION OF PESSARY, THIRD STAGE.

immersing them in boiling water or holding over a lamp until the rubber softens.

After the pessary has been inserted, the patient should be instructed to return to the office once or twice a week for a month, after which time the intervals between her visits may be gradually increased until she is seen about once a month. The pessary should be removed if the slightest pain is caused by it, and if the patient lives at a distance she should be instructed to remove it herself

under these conditions. Vaginal irrigations of hot water containing some mild antiseptic should be recommended as long as the pessary is worn.

PROLAPSE OF THE UTERUS.

In prolapse the uterus is displaced downward, its long axis at the same time being changed so as to correspond with that of the vagina. Downward displacements are frequently accompanied by prolapse of the posterior vaginal wall (rectocele), and of the

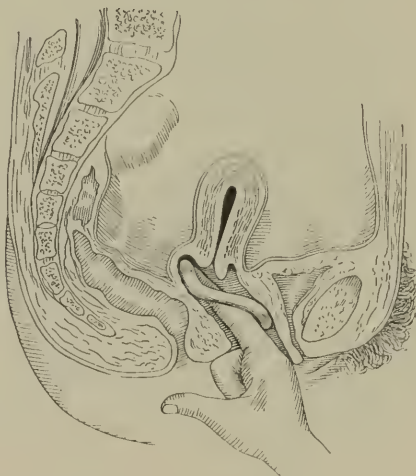


FIG. 88.—INTRODUCTION OF PESSARY, FOURTH STAGE.

anterior vaginal wall with the bladder (cystocele). For convenience in description, prolapse of the uterus is divided into three degrees: in the *first* the cervix rests upon the pelvic floor, in the *second* it appears at the vulvar orifice, and in the *third* degree the organ is entirely outside the body and hangs between the thighs. The third degree is also known as *complete prolapse* or *procidentia*. Prolapse may be *acute* or *chronic*.

Causes.—The causes may be divided into *predisposing* and *exciting*.

Predisposing Causes.—Frequent or improperly managed labors, habitual constipation, hard work, improper arrangement of dress, advanced age. Severe tenesmus from dysentery is also given as a cause.

Exciting Causes.

1. Those produced by *lack of uterine support*, such as is caused by destruction of the perineum, loss of tone of the vaginal walls, relaxation of the uterine ligaments, absorption of fat from pelvic areolar tissue, atony of abdominal or respiratory muscles, an abnormally large pelvis.

2. Those produced by *increase of uterine weight*, such as *tumors*, either in or on the uterus, pregnancy, hypertrophy, retained fluid in uterine cavity.

3. *Those which produce a descent of the uterus from pressure above*, as abdominal tumors, ascites, violent muscular efforts, straining at stool, tight or heavy clothing, violent coughing, etc.

4. *Those which produce traction from below*, as prolapse of the rectum, bladder, or vagina, or an abnormally short vagina. The most common single cause of prolapse is a lacerated pelvic floor and perineum, accompanied by habitual constipation. In such cases attempts to relieve the bowels by straining cause the feces to bulge out the rectal wall into the lumen of the vagina, the proper resistance of the latter being destroyed by the laceration of the levatores ani muscles and perineum. A continuance of this action tends to draw the cervix downward, while the bladder in front prevents its forward movement. Finally, relaxation of the anterior vaginal wall also occurs, resulting in cystocele. In the majority of cases the rectocele appears first. Where cystocele is the first to appear the prolapse usually results from laceration of the anterior vaginal wall during delivery.

Pathology.—Decrease in the power of uterine support. Distention and eversion of the vagina with decrease in the power of its sphincter and thickening of its epithelium. The uterus is enlarged from impairment of its circulation, its cavity is increased in size, and hyperplasia of its areolar tissue may result. The endometrium becomes thickened, congested, and inflamed.

Ectropion may occur.

Varicose degeneration of the vessels of the cervix may take

place with consequent absorption of its proper tissue ; ulceration may also occur.

Pelvic congestion from compression of the hypogastric veins.

Tension on the broad ligaments may produce obstruction of the ureters and hydronephrosis.

Occasionally, epithelioma from continued irritation of the cervix.

Varicocele of the pampiniform plexus from torsion of the broad ligaments. When cystocele is present, complete evacuation of the bladder can not be obtained, and the result is dysuria, ardor urinæ, and cystitis or retention of urine.

Symptoms.—In *acute prolapse* the symptoms are those of shock, severe pelvic pain, and, possibly, hemorrhage.

In Chronic Prolapse.—A sensation of weight or “bearing down” in the pelvis ; pain in the back or loins ; pains radiating down the thighs with inability to walk ; headache, occipital or coronal ; rectal tenesmus ; constipation ; vesical irritability ; leukorrhea ; inability to lift heavy weights ; nervous phenomena or absolute hysteria may occur. Disorders of menstruation and sterility are infrequent.

Physical Signs.—The uterus is seen partly or entirely protruding from the vagina, according to the degree of the prolapse. In prolapse of the first and second degrees, a protrusion of the anterior wall at the ostium vaginæ occurs, the cervix is found lower than normal. When laceration of the pelvic floor has taken place the posterior wall also protrudes. In prolapse of the third degree the uterus is covered by the anterior and posterior vaginal walls, and is accompanied in its descent by the lower wall of the bladder and anterior wall of the rectum. The cervix can be recognized by the external os ; it is enlarged, inflamed, more or less eroded, and the lips are everted.

Bimanual Examination.—The vaginal hand will demonstrate the presence of the uterus in the vagina with more or less eversion of the latter. The uterus is in a state of retroversion. The vaginal canal is shortened. The abdominal hand will fail to find the fundus uteri in its normal position. The broad ligaments are found to be tense.

By passing a sound in the bladder and a finger in the rectum, the two meet without the interposition of the uterus.

Diagnosis.—Prolapse of the uterus must be differentiated from

1. Inversion.
2. Polypus.
3. Infravaginal elongation of cervix.

Inversion.—Inversion can be distinguished by the shape of the mass, the largest circumference of which is below in inversion, like an inverted pear. The presence of a constricting band or collar formed by the cervix at the highest part of the mass. The absence of the cervical canal and the presence of the openings of the Fallopian tubes. Pressure made in the anterior rectal wall will sometimes demonstrate a cup-like depression in the intrapelvic cervix.

Polypus.—Bimanual examination shows the fundus uteri in normal position. The cervical opening presents itself *above* the tumor.

Infravaginal Elongation of the Cervix.—The fundus is in nor-



FIG. 89.—BRAUN'S COLPEURYNTER.

mal position. The introduction of a sound will demonstrate the increased length of the uterus. Vaginal examination will show the cervix to be elongated.

Treatment.—Place the patient in the knee-chest or dorso-sacral position (the former is to be preferred), and replace the uterus. In cases of acute prolapse the vagina should be lightly packed with aseptic gauze or cotton and an ice-bag placed upon the suprapubic region. Symptoms of internal hemorrhage or shock should be treated in the usual manner.

In chronic prolapse, where excoriations exist, it is better, after replacement, to treat the ulcerations before applying permanent support. This should be done by applications of iodine or boric acid. Frequently these ulcerations will disappear of themselves after the uterus has been replaced for some days. In recent cases of slight prolapse, where the vaginal walls are but little

relaxed, relief can be afforded by rest in bed and the use of tampons of lamb's-wool, cotton, or gauze (the first is the best), covered with an astringent ointment.

Among the many means devised for the retention of the uterus in position, Braun's colpeurynter has been especially recommended.

Before introducing the instrument the vagina should be thoroughly cleansed. The instrument should be covered with some unctuous substance to prevent excoriations of the parts. Before completely inflating the instrument with air an ounce or two of water is introduced to prevent the gradual escape of the air. The uterus may also be supported by pessaries, such as those devised by Gehrung, Cutter, or Albert Smith.



FIG. 90.—THOMAS-CUTTER PESSARY.

Where the prolapse has been caused by relaxation of the pelvic floor due to lacerations, operative restoration of the same is indicated. Among the operations used are: Hegar's or Martin's posterior colporrhaphy, the anterior colporrhaphy of Stoltz or Emmett, or Lefort's partitioning of the vagina. The last named consists in dividing a strip from the mucous membrane of the cystocele and rectocele, uniting the two by sutures. It makes practically a double vagina. Freund's method of encircling the vagina with sutures of silver wire is sometimes used, but is not generally recommended. Alexander's operation is sometimes of use in these cases.

Enlargement and subinvolution of the uterus should be treated by curettement and packing, as in endometritis. The bowels should be kept freely opened. Pressure from above, due to tightly fitting clothes, must be relieved by the use of skirt supporters.

INVERSION OF THE UTERUS.

Definition.—"This dangerous and infrequent form of displacement consists of the turning of the uterus inside out" (Thomas and Mundé).

"The uterus is upside down and wrong side out" (Parvin).

Causes.—These are divided usually into *puerperal* and *non-puerperal*.

Puerperal Causes.—Traction on the umbilical cord, excessive and unskilful abdominal pressure on the uterus in attempting to dislodge a retained placenta, paralysis of the placental site, general mismanagement of labor, relaxation and inertia of the uterine walls. The puerperal form is also described as *acute inversion*.

Non-puerperal Causes.—Tumors, especially pedunculated fibroids of the fundus.

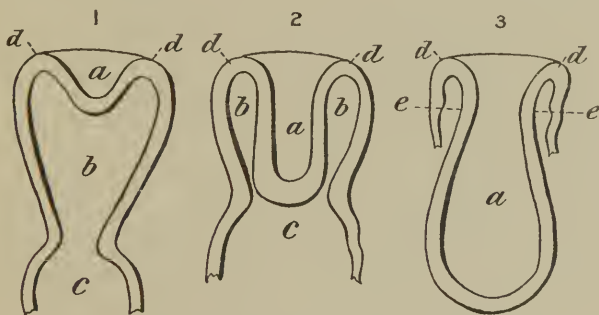


FIG. 91.—THREE DEGREES OF INVERSION.

1. Depression. 2. Introversion. 3. Complete inversion. *a*, Fundus uteri. *b, b*, Inversion partially filling the uterine cavity. *c*, Vagina. *d, d*, Mouth of inverted portion.—(From Parvin's "Obstetrics.")

Varieties.—

1. *Slight* inversion is described as a small pitting in the uterine fundus.

2. *Partial* inversion is where the fundus has descended to the internal os.

3. *Complete* inversion; the fundus has passed through the internal os, which forms a constricting ring around it. The uterus is turned inside out.

Inversion is also subdivided into—

(*a*) *Simple*.—The body of the uterus is inverted, but the cervix and bladder retain their position.

(b) *Complicated*.—The body and cervix are both inverted and the displacement is accompanied by prolapse and cystocele, or rectocele, or both.

Pathology.—The uterine structure becomes hyperemic and swollen, with a tendency to hemorrhage. Gangrene may occur in the constricted portion. The pocket formed by the inverted body of the uterus may be occupied by the tubes, ovaries, or loops of intestine which prolapse into it. Hyperemia of the tubes and ovaries occur. Erosion and ulceration of the prolapsed mucous membrane frequently take place. The causes of death in fatal cases are: shock, hemorrhage, septicemia, or peritonitis.

Symptoms.—The symptoms of *acute* inversion are those of pain, hemorrhage, and shock. •

In the *chronic* form the symptoms are: hemorrhage, either constant or occurring at irregular intervals; heavy, dragging pains in the back and lower abdominal regions; difficulty in locomotion, micturition, and defecation. Symptoms of anemia and exhaustion will appear as the case progresses.

Physical Signs.—An inverted uterus will appear as a soft, globular or pear-shaped mass, the largest bulk of which is *below*. Above, surrounding the constricted portion of the mass, a ring or collar, the internal os uteri, can be easily felt. The uterine mucous membrane can be recognized, and occasionally in complete inversion the openings of the Fallopian tubes can be seen. Palpation of the lower abdominal region above the pubes will fail to find the uterine body in its normal position; in its place will be a hollow, funnel-like depression. Vaginal examination will demonstrate the cervix in a position considerably higher than normal.

By rectal examination a hard body can be felt in the vagina; this tumor will be found to end abruptly above; frequently the constricting ring can be quite clearly distinguished. The fundus of the uterus can not be felt.

In the chronic form the uterine mucous membrane is spongy, soft, and bleeds easily, the cervix is thickened and the vaginal culdesacs obliterated.

Diagnosis.—The diagnosis is made from the shape and position of the mass in the vagina, the constricting ring at the upper part of it,—*i. e.*, the internal os,—and the absence of the fundus

from its normal position. The symptoms and history of the patient must be taken into consideration.

Differential Diagnosis.—Inversion of the uterus must be distinguished from complete prolapse, uterine polypus, or a fibroid growing from one lip of the cervix.



FIG. 92.—POLYPUS.



FIG. 93.—INVERSION.

PROLAPSE.

1. Largest part of tumor above.
2. No opening of tubes can be seen.
3. Obliteration of the vaginal culdesacs and probable prolapse of vaginal walls.
4. Not present.
5. A sound can be passed through the external os into the uterine cavity.

INVERSION.

1. Tumor is globular or pear-shaped, the largest part being below.
2. Openings of tubes may be seen.
3. Vaginal culdesacs not obliterated.
4. The upper part of the mass is surrounded by a ring or collar formed by the internal os.
5. Sound can not be passed through the external os.

POLYPUS.

1. Bimanual examination will demonstrate the fundus uteri in its normal position in the abdomen.
2. The sound can be passed by the tumor and into the uterine cavity for a distance of about two and one-half inches.
3. Rectal examination demonstrates the uterine body to be in normal position.
4. By rectovesical examination the fundus will be felt between the bladder and rectum.
5. Puncture with a sterilized needle causes no pain.

INVERSION.

1. Fundus is absent and in its place will be felt a funnel-like depression.
2. The sound is arrested at the cervix ; it can be passed all around the tumor.
3. Rectal examination demonstrates the uterine body to be absent.
4. The fundus can not be felt between the bladder and rectum.
5. Will cause pain.

FIBROID POLYPUS.

1. Limanual examination by rectum and vagina will prove the round uterine body in normal position.
2. The sound shows increase in size of uterine cavity.
3. Gradual appearance.
4. Does not occur from parturition.

PARTIAL INVERSION.

1. Recto-abdominal examination will reveal a small depression.
2. Length of uterine cavity is found diminished.
3. Sudden appearance.
4. Usually follows parturition.

The **prognosis** of inversion is always grave. In very rare instances spontaneous restitution may occur. In the acute form following childbirth, death occurs from shock or hemorrhage, if the condition is not quickly relieved. The prognosis of the non-puerperal chronic form is somewhat better. Rupture of the vagina may occur from overenthusiastic efforts at replacement, or the patient may later die of general sepsis or peritonitis.

Treatment.—The chief indication is to replace the uterus as quickly as possible. The bowels should be thoroughly evacuated and the vagina flushed out with hot water ; injections of tannin,

alum, infusion of belladonna, or other astringents being advised by some.

Bimanual Method of Reduction.—The patient being in the dorsal position, the operator should cover one hand with some unctuous substance and gradually dilate the vagina until he can grasp the entire inverted uterus. With the other hand he makes firm pressure upon the abdomen over the ring which marks the non-inverted cervix. With the vaginal hand the operator makes firm, steady pressure upward, endeavoring to force the fundus through the constricting ring of the cervix. Occasionally, the

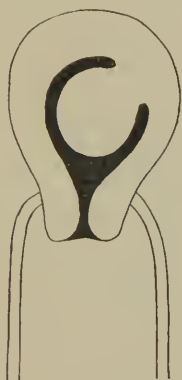


FIG. 94.—FIBROUS POLYPUS.



FIG. 95.—PARTIAL INVERSION.

size of the tumor can be somewhat reduced and the usual hemorrhage stopped by firm compression with the fingers. It should be remembered, in replacing, that the part of the uterus which came out last should be replaced first. Occasionally, the replacement can be started by pressure on one or the other uterine cornu.

Emmet's method consists in causing the finger encircling the cervix to make a decided motion of extension, counterpressure at the same time being kept up by the fingers over the abdominal ring. Other methods of manual replacement have been devised by Noeggerath, Courty, and others.

Replacement by Instrumental Means.—Should efforts at manual replacement fail, the colpeurynter of Braun may be used with success. The instrument should be made aseptic, then inserted into the vagina and filled with water until it fits the pelvis snugly. More water is then gradually introduced into the instrument, the object being to exert continuous pressure. Instruments

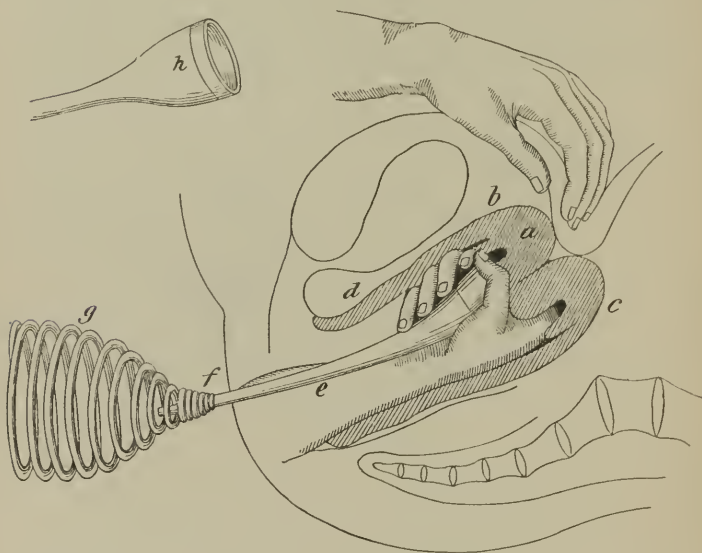


FIG. 96.—RAPID REDUCTION BY WHITE'S METHOD.

Operator grasps uterus (*a*) and presses his chest against spiral spring (*g*, *f*), which forces cup (*h*) of repositor (*e*) against fundus.

such as the cup-and-stem repositor and White's egg-beater repositor have been devised. The former is very useful to hold the uterus in place, when partially replaced. The latter has been frequently used with success in the reduction. Its method of application can be seen in the accompanying cut (see Fig. 96).

Thomas' method consists in opening the abdomen over the cervix and dilating the ring by means of a glove-stretcher, while

a hand in the vagina makes pressure on the inverted portion, forcing it up through the cervix.

In endeavoring to replace an inverted uterus no one method of reduction should be kept up for too long a time, as such efforts may be dangerous to the patient. When some part of the uterus has been replaced, this should be held in position by the cup and stem, the colpeurynter, or, as advised by Emmet, by stitching the cervix together below the inverted portion.

Between the efforts at reduction the patient should be given opium for the pain and kept in a state of absolute quiet. After all efforts have been unsuccessfully resorted to, vaginal hysterectomy may be necessary.

DEVIATIONS IN FUNCTION.

"Abnormal changes in the menstrual flow are to be regarded only as symptoms, which have their origin often in opposite conditions and require discrimination in their treatment" (Emmet).

AMENORRHEA.

The absence or marked deficiency of menstruation at a time when it naturally should appear.

Causes.—May be divided into physiologic and pathologic.

The physiologic causes—pregnancy, lactation, and the menopause—will not be treated here, as they belong to the subject of obstetrics.

Pathologic Causes.

1. Taking cold, especially at the menstrual period.
2. Severe shock, either mental or physical, such as fright, great surprise, etc.
3. May be caused by various diseases, such as typhoid fever, nephritis, diabetes, tuberculosis, pelvic peritonitis, or general sepsis, syphilis, chlorosis, etc.
4. From obesity.
5. Luxurious mode of life.
6. Overtaxing the nervous system.
7. Stenosis or atresia of the cervical canal.
8. Lack of development of uterus, tubes, or ovaries

9. The discharge of blood may take place from other organs than the uterus, as the nose, lungs, bladder, rectum, stomach, nipples, or skin.

When the discharge of blood from other organs accompanies that from the uterus, the condition is known as *supplementary menstruation*.

When the discharge occurs from other organs only, no discharge from the uterus taking place, the condition is called *vicarious menstruation*, or *xenomenia*.

Emansio mensium is a condition in which menstruation has never appeared.

Suppressio mensium is where the menstruation has appeared, but fails to reappear.

Symptoms.—The symptoms of amenorrhea are generally those of the primary disease causing the condition. When it arises from taking cold, such symptoms as fever, rather severe headache, pains in the back, pelvis, and down the thighs, irritability of bladder and bowels generally appear. Hemorrhages from other organs are apt to occur. When amenorrhea is due to chlorosis, the general symptoms of this form of anemia will be present. When amenorrhea arises from *obstruction* in any part of the genital canal, severe attacks of pain once a month, with coincident enlargement of the uterus, will appear. In the interval between the periods at which menstruation ought to occur, the uterus goes back to nearly its normal size.

Diagnosis.—Great care must be exercised to distinguish pathologic amenorrhea from that arising from pregnancy. The history of the patient should be carefully taken and a thorough examination made to determine the cause of the condition. Examinations of the lungs, heart, and urine should always be made in patients with absence of menstrual flow. Careful examination of the abdomen by palpation and auscultation is necessary. When the condition is persistent, the patient should be referred to another visit and a second examination made. In these cases the fetal heart sounds and movements should be diligently sought for unless some other cause for the amenorrhea can be found.

Treatment.—When the condition arises from cold, the patient should take warm sitz-baths or soak the feet and legs in hot mus-

tard-water. Hot applications to the abdomen and to the legs and thighs frequently give relief. Hot vaginal injections and a saline laxative will be found useful. When the amenorrhea arises from *shock*, the patient should be kept in an atmosphere of quiet; such agents as bromids, manganese, massage, and, later, exercise on horseback may be advised. When arising from disease, the treatment of the amenorrhea is that of the condition causing it. When occurring from lack of development of the uterus, Simpson's galvanic pessary and Faradic electricity are advised by some. Among the drugs most commonly used in the treatment of amenorrhea, aloes or aloin, myrrh, and iron are of the most importance. When the condition arises from anemia a good prescription is as follows :

R. Aloin, gr. iij
 Vallet's mass, } each, gr. xij.
 Myrrh, }
 Mix and make into 12 pills.
 SIG.—Two to 4 pills, and repeat as necessary.

Blaud's pill, permanganate of potash, oxygen, and arsenic are also of great use in these cases. The patient should be placed on a nutritious diet, including considerable meat. She should be allowed plenty of fresh air, regulated exercise, and general good hygiene. Where the girl is overworked at school or in the factory or store, she should be taken away and a more healthful life prescribed. In *gouty or rheumatic subjects*, guaiacum, sodium salicylate, strychnin, indigo, etc., have their advocates. In *nervous subjects*, bromids, camphor, cannabis indica, etc., are useful.

Hypnotism is said to have been used with success in some cases. Amenorrhea arising from *obstruction* due to a resistant hymen, stenosis, or atresia of the cervical canal should be treated by incising the obstruction. This subject will be taken up in the chapter on the Deviations in the Uterine Structure.

MENORRHAGIA AND METRORRHAGIA.

Menorrhagia is an abnormally increased menstrual discharge.

Metrorrhagia is a discharge of blood from the uterus at other than the menstrual periods.

Causes.—(a) *Those which affect the uterus primarily, as—*

1. Endometritis, especially the granular or fungoid form.
2. Interstitial, or submucous fibroid tumors or polypi.
3. Para- or perimetritis.
4. Retained secundines from an incomplete abortion.
5. Subinvolution.
6. Malignant disease.
7. Chronic inversion.

(b) *Those which affect the uterus secondarily, as—*

1. Diseases of the tubes and ovaries.
2. Renal, hepatic, or cardiac diseases, tuberculosis, the continued fevers, scurvy, etc.
3. Fecal impaction.
4. Hemophilia.
5. Ectopic gestation.

Treatment.—The cause should be sought for and treated. When the condition arises from endometritis, either alone or associated with subinvolution, the cervix should be dilated and the uterus curetted and irrigated with a hot antiseptic solution. (See *Treatment of Endometritis.*)

Applications of astringents, such as iodine, perchlorid of iron, carbolic acid, etc., are advised by some authorities. The fluid extract of ergot and hydrastis in doses of from fifteen to thirty drops do good in some cases. Copious vaginal injections of hot water are very serviceable. When other means fail, the vagina should be tamponed with absorbent cotton. Fibroids and polypi require the removal of the tumor itself, or, where this is impossible, the removal of the entire uterus. Malignant disease should be treated by vaginal hysterectomy.

DYSMENORRHEA.

Difficult or painful menstruation.

Varieties.—

1. Neuralgic.
2. Congestive.
3. Mechanic.
4. Membranous.
5. Ovarian.

1. NEURALGIC DYSMENORRHEA.

This form is usually found in neurotic subjects. It may arise secondarily from a general neuralgic diathesis, from malaria, gout, or rheumatism.

Symptoms.—The pain is usually most severe *before the onset of the flow or during the first few hours*. The seat of the pain is usually pelvic, with extension down the loins, and its character sharp and steady, not expulsive. The pelvic pain may be accompanied by neuralgia in other parts of the body. The flow is usually steady and without clots. No signs of inflammation exist. Between the periods the patient is usually free from pain and no pathologic changes occur.

Treatment.—Treat the condition causing it, where this can be found. In gouty or rheumatic subjects, colchicum, guaiac, or sodium salicylate will be found useful. Where the dysmenorrhea arises from anemia, give iron and general tonics combined with a good diet and out-door life. For the dysmenorrhea many remedies have been recommended. Among the best are the fluid extract of viburnum prunifolium, apiol in five-drop capsules, one capsule given night and morning. Some authorities advise that this be given one week before the menstrual period; the tincture of pulsatilla in five-drop doses preceding menstruation. Arsenic in full doses has also been recommended. During the attack of pain antipyrin or phenacetin does good. Tincture of cannabis indica in twenty-five-drop doses has been found useful. External heat in the form of hot-water bags, or counterirritation with mustard, is comforting to the patient. Hot sitz-baths and hot vaginal injections should be tried. Sometimes the pain is so severe as to demand the use of morphia hypodermically, or the inhalation of ether.

2. CONGESTIVE OR INFLAMMATORY DYSMENORRHEA.

Causes.—

- (a) Exposure to cold or dampness.
- (b) Displacement of the uterus.
- (c) Plethora.
- (d) Engorged portal circulation.
- (e) Inflammation of the uterus.

(*f*) Pelvic or uterine tumors.

(*g*) Peritonitis.

Pathology.—The usual menstrual congestion has increased to such a degree as to become pathologic.

Symptoms.—When the dysmenorrhea is acute the attack comes on with a severe pelvic pain, accompanied by a diminution or, possibly, complete cessation of the discharge. This pain generally lasts all through the period, except when occasionally a free flow relieves it. The accompanying constitutional symptoms are: some rise of temperature, pain in the head, nervousness, restlessness, and a full, rapid pulse. The skin is hot and dry and the eyes suffused. There may be diarrhea or rectal or vesical tenesmus. When due to such causes as displacements, tumors, etc., the condition is marked by a certain sense of weight in the back and pelvis and some leukorrhea between the periods; these symptoms increase just before the flow begins and assume the type before mentioned.

Treatment.—During the attack give hot sitz-baths or hot mustard foot-baths. A full dose of a saline cathartic will be found of great benefit, either alone or preceded by moderate doses of calomel. Diaphoretics are indicated. Hot applications over the abdomen do good. Displacements of the uterus should be corrected by the proper means. Plethora should be treated by cathartics or blood-letting and a low diet.

During the intermenstrual period tampons saturated with glycerin and applied to the cervix, the patient being in the knee-chest or dorsal position, will be found of great use. Scarification of the cervix has been advised. The continued use of copious hot-water injections into the vagina given twice a day are useful. Where the dysmenorrhea arises from endometritis, curet the uterus, wash out with an antiseptic solution, and apply iodine or carbolic acid; or, better, pack the cavity with iodoform gauze. This should be done between the periods.

3. MECHANIC OR OBSTRUCTIVE DYSMENORRHEA.

Definition.—Violent spasmodic pain, usually caused by some mechanic obstruction either in the vagina or cervix uteri.

Causes.—

- (a) Stenosis or atresia of the os uteri.
- (b) Atresia of the vagina due to inflammation, cicatricial bands, or imperforate hymen.
- (c) Flexions of the uterus.
- (d) Tumors obstructing the cervical canal.
- (e) Spasmodic contractions at the internal os.

Pathology.—The accumulation of menstrual blood beyond the point of tolerance causes the uterus to contract violently in its efforts to expel the offending material.

Symptoms.—Sharp, spasmodic, cramp-like pains, like those of miscarriage, and followed by partial or complete relief when a quantity of blood is expelled. The point of obstruction can generally be demonstrated by the finger or sound. When stricture of the cervical canal is due to antelexion, the obstruction is generally at the internal os. Congenital malformation of the canal usually shows the obstruction to be at the external os uteri.

Treatment.—When the condition is the result of atresia or stenosis the point of obstruction must be sought for and an opening made by means of a sound or tents. Narrowing of the cervical canal should be treated by dilatation by means of graduated solid dilators or the parallel-bladed instrument of Goodell. Where endometritis complicates the condition the uterine cavity should be curetted, washed out, and packed with iodoform gauze.

Stricture of the cervical canal caused by flexions is to be treated by elevating the uterus and applying a suitable pessary; or, when this is impossible, incision through the posterior wall of the cervix may be necessary to allow the escape of the fluid. The strictest asepsis must be maintained in all such operations.

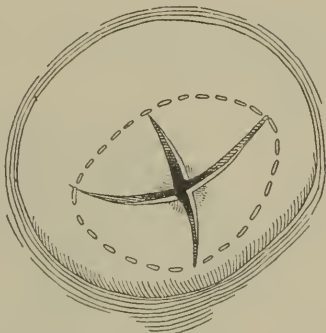


FIG. 97.—CRUCIAL INCISION OF EXTERNAL OS FOR DYSMENORRHEA.

4. MEMBRANOUS DYSMENORRHEA.

Definition.—"This variety of dysmenorrhea consists in the expulsion of organized material from the uterine cavity at the menstrual periods. This material is found, on microscopic examination, to consist of the lining membrane of the uterus itself" (Thomas and Mundé). This condition is also known under the names of *exfoliative endometritis*, *endometritis dissecans*, *decidua menstrualis*.



FIG. 98.—DYSMENORRHEAL MEMBRANE.

Causes.—Obscure in many cases. It is, however, generally associated with a reduced general state of health.

Pathology.—According to Winckel, the membrane presents a smooth, reddish, inner surface upon which the orifices of the utricular glands can be seen with the naked eye. The membrane shows the changes characteristic of endometritis, hence the name of *endometritis dissecans*. The sac may be a complete or partial cast of the uterus, or may be expelled as a number of shreds of membrane. The microscope demonstrates the presence of utricular glands and interglandular tissue unlike that of the irregular decidual cells of pregnancy. No chorial villi are to be found.

Symptoms.—Severe continuous pain, increasing as the menstrual period advances. The pains are expulsive in character and are accompanied by dilatation of the os. After the discharge of the membrane the pains cease. Menorrhagia is often coexistent. These symptoms recur at each menstruation.

Diagnosis.—The diseases with which membranous dysmenorrhea is most likely to be confounded are: *a.* Abortion. *b.* Blood or fibrous casts of the uterus. *c.* Exfoliation of the vaginal mucous membrane. It is very likely to be mistaken for the first. The chief diagnostic points are the regular recurrence of the disease and the absence of the chorial villi.

Treatment.—In the interval between the periods curet the interior of the uterus and pack; afterward apply iodine in some form, carbolic, chromic acid, nitrate of silver, or zinc chlorid.

This operation will probably have to be repeated several times. Morphin may be given guardedly for the pain, or inhalations of ether may be necessary. Attention should be given to the general health.

5. OVARIAN DYSMENORRHEA.

The ovaries are frequently in a state of prolapse and may be inflamed. In many cases, however, no diseased condition can be found.

Symptoms.—The pain always precedes the flow, and in some cases appears several days before it. The pain is felt down the thighs, and is accompanied by nervous or hysteric symptoms. The breasts may become tender and painful.

Treatment.—Warm sitz-baths. Heat over the abdomen. Internally, bromids or monobromate of camphor at the time of menstruation. Heat should be applied to the abdomen and feet. Thomas and Mundé recommend rectal enemata, such as the following :

R.	Tr. asafetida,	℥ ij
	Tr. belladonna,	gtt. xx
	Tr. opii,	gtt. x
	Aqua tepidæ,	℥ iij.

Morphia and alcoholic stimulants should be avoided.

ANOMALIES OF THE UTERUS.

The uterus, vagina, and Fallopian tubes are formed by the coalescence of the inferior portions of Müller's ducts. (See text-books on anatomy.) This union takes place about the second month of embryonic life.



FIG. 99.—MÜLLER'S DUCTS.

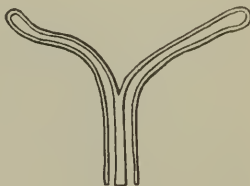


FIG. 100.—COALESCENCE OF DUCTS.

At the earliest stage of its development the newly formed uterus and vagina are separated into two canals, the septum between them being the united proximal walls of the two Müller's ducts.

Normally this septum is at a later period absorbed. Above this the branching portions of the two ducts form the cornua of the

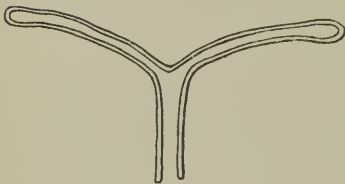


FIG. 101.—DISAPPEARANCE OF SEPTUM.

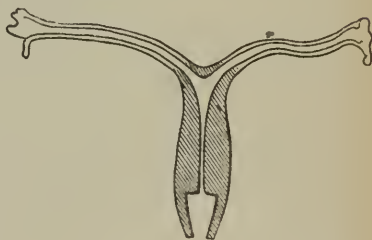


FIG. 102.—APPEARANCE OF FUNDUS AND CERVIX.

uterus, while the remainder becomes the Fallopian tubes. Anomalies in the formation of the internal genital organs are caused by an arrest of development at some incomplete stage. Such malformations may be classified as follows:

1. *Defectus Uteri*.—The uterus is totally absent.
2. *Rudimentarius Uteri*.—Arrested development leaves the uterus in a rudimentary state.
3. *Uterus Septus*.—The uterus is divided into two chambers.
4. *Uterus Unicornus*.—Only one horn has been developed; the Müller's duct on the other side is undeveloped, absent, or atrophied.
5. *Uterus Bicornus*.—Resulting from non-union of the part of Müller's ducts which should form the corpus uteri. Each cornu and even the cervix may be divided into two compartments.
6. *Uterus Duplex or Didelphys*.—Two independent and complete uteri are developed. This condition is very rare.
7. *Infantile Uterus*.—The cervix is too long proportionately for the body, this increase in proportion remaining at birth.
8. *Congenital Atrophy of the Uterus*.—The uterus is atrophied, but the cervix and body retain their relative proportions.

ATRESIA AND STENOSIS OF THE CERVICAL CANAL.

By *atresia* is understood an entire absence of the cervical canal.

Stenosis is a narrowing of the canal to a greater or less extent.

Obliteration of the cervical canal may be congenital or acquired, and may be either partial or complete. Complete atresia is apt to be congenital.

Acquired stenosis may occur from the following causes:

1. Senile atrophy. This form is found occasionally in old women.
2. From amputation of the uterine neck.
3. From injuries during parturition.
4. Use of caustics.

Results.—Where the stenosis is only partial, there will be pain, increased during the menstrual period and accompanied by an increase in the size of the uterus, caused by retained menstrual secretion. In old women a thin, watery secretion may thus be retained, producing the condition known as *hydrometra*.

Retention of the menstrual blood within the uterus gives rise to the condition known as *hematometra*, and when this blood undergoes suppurative action it is known as *pyometra*.

Very rarely a gaseous decomposition of the fluid occurs, this

DIFFERENTIAL DIAGNOSIS.

TUMORS PRODUCED BY STENOSIS OR ATRESIA. (The most common being Hematometra.)	FIBROUS TUMORS.	MALIGNANT GROWTHS.	OVARIAN CYSTS.	PREGNANCY.
1. Menstruation decreased or suppressed.	1. Menstruation increased.	1. Menstruation increased; characteristic watery discharge.	1. Menstruation slightly increased or not affected.	1. Menstruation suppressed.
2. Rapid growth, increasing regularly at menstrual periods, with slight decrease between them.	2. Slow growth, may increase slightly just before menstruation.	2. Slow growth, not affected by menstruation.	2. Slow growth, not affected by menstruation.	2. Rapid and regular growth.
3. Pain increased during menstruation.	3. Pain slight.	3. Pain severe and constant.	3. Pain more or less constant.	3. No pain.
4. Tumor intrauterine and dull on percussion, except in cases of pyometra, when it is tympanitic.	4. Tumor attached to uterus, but outside of its cavity, hard, irregular and resistant.	4. Tumor apt to be in cervix, and can be felt by vaginal examination; microscope will demonstrate the structure.	4. Tumor extrauterine, and can be outlined by percussion.	4. Tumor intrauterine; fetal parts can be outlined.
5. General health not much affected.	5. Some deterioration in health.	5. Great deterioration in health.	5. Great deterioration in health.	5. Health not affected.
6. Sound can not be passed into uterus.	6. Sound can be passed into uterine cavity.	6. Sound can be passed into uterine cavity.	6. Uterine cavity empty.	6. Uterine cavity full; sound can not enter unless force is used.
7. Objective and subjective signs of pregnancy absent.	7. Same.	7. Same.	7. Same.	7. Objective and subjective signs of pregnancy present.

being known as *physometra*. Retention may also be caused by certain forms of vaginitis and by imperforate hymen.

Secondary Consequences.—Extension of the fluid into the Fallopian tubes, producing rupture, peritonitis, pelvic hematocele, or rarely rupture of the uterus. Septicemia.

Treatment.—When partial stenosis exists, the canal must be found and stretched by means of graduated solid or glove-stretcher dilators, and packed with iodoform gauze. Later, it must be kept open by occasionally introducing the graduated dilators. When complete atresia exists, the patient should be anesthetized, placed in the lithotomy position, and, after carefully cleaning the vagina antiseptically, an aspirator needle should be passed into the cavity of the uterus through the impervious cervix and a small quantity of the fluid withdrawn to confirm the diagnosis.

The cervical canal should then be opened by incisions made with a pointed bistoury and stretched by means of Ellinger's dilators. Many operators prefer the retained fluid to escape gradually. The vagina and uterus should then be washed out with an antiseptic solution and the cervix packed with iodoform gauze, which should be removed at the end of from twenty-four to thirty-six hours. A glass or hard rubber plug should be worn for some time, to keep the canal open.

When atresia of the vagina exists, it is often necessary to dissect up between the vagina and rectum, making an artificial canal, or to draw off the fluid by puncture through the bladder or rectum.

SUPRA- AND INFRAVAGINAL HYPERTROPHY OF THE CERVIX.

Supravaginal hypertrophy consists of enlargement of the cervix above the vaginal insertion. It is most common in those who have not borne children. The causes are obscure. A certain amount of vaginal prolapse may occur, due to the elongation of the cervix and its increased weight. The symptoms are the same as those of prolapse. Sterility is common.

In **infravaginal hypertrophy**, or **hypertrophic elongation**, the size, particularly the length of the cervix is increased

within the vaginal tube. This form may occur as a complication of prolapse, from lacerations, or occasionally in the nulliparous.

Symptoms.—A sense of weight and bearing down in the pelvis, increased by walking. Leukorrhea, pain in the back, and the nervous disturbances common to uterine affections. Sterility.

Diagnosis.—Straining does not increase the prolapse, as it does in the true form. The sound will demonstrate the increased length of the uterus. In the supravaginal form the increased size of this part of the cervix can be felt through the vaginal cul-de-sacs.

The infravaginal form can be clearly demonstrated by the finger. In both forms a portion of the fundus remains in the abdominal cavity, and can be felt by bimanual examination. The uterus is less mobile than in true prolapse and the dorsal or knee-chest position will not aid in replacement.

Treatment.—High amputation of the cervix. Where the vagina is greatly relaxed it may be narrowed by anterior or posterior colporrhaphy. In some cases of supravaginal hypertrophy curetage will be followed by good results. The treatment should be directed to hastening involution of this part of the uterus. The patient should rest in bed or on a lounge for an hour or so every day, especially during menstrual periods.

Congestions should be prevented by suitable means. The general system must be kept in good order.

Pressure on the uterus from above by tight clothing must be relieved.

LACERATIONS OF THE CERVIX UTERI.

Lacerations of the cervix may be unilateral, bilateral, or stellate.

Unilateral tears are most common on that side of the cervix through which the occiput of the child has passed in labor. They are usually, therefore, found on the left side.

Causes.—

1. Rapid expulsion of the child through the cervix before the latter is fully dilated.
2. Premature rupture of membranes.
3. Application of forceps before the cervix is dilatable.

4. Use of mechanical dilators.
5. Cicatricial induration.
6. Rigid os.

The cervix may be lacerated during a miscarriage as early as three months.

Pathology and Consequences.—When the laceration is slight, no evil results may follow. Indeed, a large number of women who have borne children have had some small tear in the cervix, and pass through life without any discomfort whatever.

1. In cases where the laceration is deep, inflammation is set up.

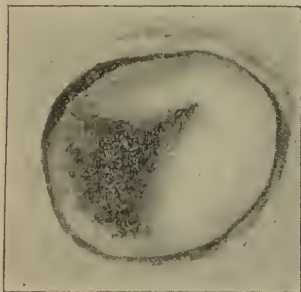


FIG. 103.—UNILATERAL LACERATION OF THE CERVIX.



FIG. 104.—BILATERAL LACERATION OF THE CERVIX WITH EVERSION OF THE CERVICAL MUCOUS MEMBRANE.

The uterus first fails to undergo normal changes, and a state of *subinvolution* follows.

2. Hyperplasia of the uterus occurs, and may involve later the ovaries, tubes, and cellular tissue of the pelvis.

3. From the constant hyperemia of the organ, acute or chronic inflammatory conditions may arise, producing metritis.

4. Cicatricial tissue is formed over and around the laceration, and may, by induration, prevent the normal increase in the size of the uterus at the menstrual periods, thus producing functional disorders. The ends of nerves may be compressed by the scar tissue and cause various pains; or reflex nervous disturbances, neurasthenia, etc., may follow.

5. The heavy uterus may drag on the relaxed ligaments, and in course of time various displacements may occur.

6. Eversion of the lips of the cervix takes place, forming the condition known as *ectropion*.

7. The open wound in the cervix offers a suitable entrance for septic germs, and the danger of septicemia is increased.

8. Where lacerations through the anterior lip extend beyond the vaginal junction, a vesicovaginal fistula may result.

Symptoms.—Pain, dull and heavy in character, in the lumbar and sacral regions, accompanied by a sensation of a dragging weight in the pelvis. Pain may also exist in the usual parts affected by uterine disease, *i. e.*, in the hips, thighs, the top and

back of the head. Pain is present after coition (dyspareunia). Leukorrhea, menorrhagia, metrorrhagia, sterility, or habitual miscarriages are common. A lacerated cervix may give rise also to anemia, hysteria, and other reflex nervous disturbances. Undoubtedly, a laceration may exist for years without producing any symptoms whatever.

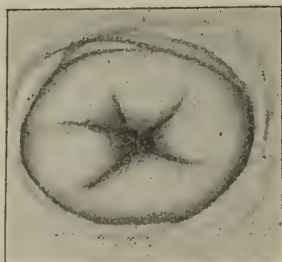


FIG. 105.—STELLATE LACERATION OF THE CERVIX.

Diagnosis.—By digital examination we find the cervix enlarged,

covered by catarrhal secretion, and more or less hard from cicatricial tissue. The os is open and the mucous membrane frequently everted. The laceration can be found on one or both sides, extending outward from the cervical canal. If the laceration is large the finger may pass to the internal os. In cases where a large amount of cicatricial tissue exists, a laceration may simulate epithelioma. In such cases the character of the discharge, a microscopic examination, and the history of the patient will aid in the diagnosis. It should not be forgotten that lacerations of the cervix are considered a frequent starting-point for malignant uterine disease, and especially epithelioma.

Treatment.—*Palliative :*

1. Free vaginal douches of hot water.
2. Applications of iodine, or iodine combined with iodide of potassium (Churchill's tincture), to the vaginal vault and cervix two or three times a week, and followed by tampons made of strips of gauze, cotton, or wool, saturated with boroglycerin.
3. Scarification of the cervix and puncturing of cysts.
4. Removal of hypertrophied tissue with a sharp curet, under strict antiseptic precautions.
5. Applications of tannic acid to the cervix two or three times a week.

Radical Treatment.—In many cases this is the only method of any avail. Before operating it is necessary to see that no inflammatory disease of the ovaries and tubes is present. The operation here to be described is known as trachelorrhaphy.

The patient is etherized and placed in the dorsal position on a hard table, with the buttocks on a perineal pad, the thighs well flexed on the abdomen, the legs held by assistants or kept in place by a leg-holder; the bowels and bladder must be well emptied.

Before operating the vagina must be thoroughly irrigated with an antiseptic solution. This may be applied through a speculum by pouring the solution from a pitcher or using a large fountain syringe. Many gynecologists prefer having a constant irrigation of the field of operation.

The posterior vaginal wall is retracted by a Sims' or Simon's speculum so as to expose the cervix, the lips of which are then caught with tenaculum or vulsellum forceps and drawn down, the lips being held well apart. The cervix is drawn slightly to one side and an incision made in the angles of the laceration as deep as the denudation on the lips is to be carried. The incision must extend into the healthy tissue. From this incision the surface of the posterior lip is denuded, as shown in figure 106, by means of a knife or curved scissors, a small strip of mucous membrane being left undenuded in the center to form the new cervical canal. This process is repeated on the anterior lip. The denudation must be so done as to remove all scar tissue and to secure a cone-shaped cervix and small external os after the two lips are brought

together. An assistant holds the lips well apart and sutures of silk-worm gut, catgut, silk, or silver wire, are then introduced by means of a stout, curved needle, just above the angle of the in-

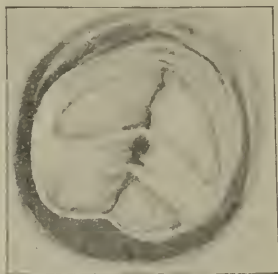


FIG. 106.—EMMET'S TRACHELORRHAPHY, SHOWING AREA OF DENUDATION IN A BILATERAL LACERATION OF THE CERVIX.

cision on the vaginal side of the denudation, but in the undenuded tissue, and brought out high up in the cervical canal; it then crosses the canal (see Fig. 107), reenters on the opposite lip, and



FIG. 107.—SAME, SHOWING METHOD OF INSERTING STITCHES.



FIG. 108.—SUTURES TIED.

is brought out on the vaginal edge of the undenuded portion of the opposite lip at a point corresponding to its entrance.

The other sutures, usually one or two in number, are passed in

a similar manner, but lower down on the cervical lips. After introducing the sutures the cervix should be again irrigated. The sutures may either be tied or passed through perforated shot, the latter being then mashed flat with a pair of forceps or shot compressor. When the laceration is bilateral the process is gone through with on both sides. The vagina is again washed out and lightly packed with iodoform gauze. Some operators remove the stitches in from eight to ten days, while others prefer to let them remain for a longer period.

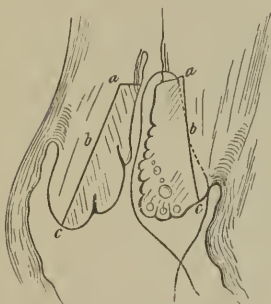


FIG. 109.—SCHROEDER'S OPERATION. LINE OF EXCISION IN EXCISION OF THE CERVICAL MUCOUS MEMBRANE, AND METHOD OF INSERTING FIRST STITCH.



FIG. 110.—SCHROEDER'S OPERATION. METHOD OF DRAWING IN EXCISED ENDS OF CERVIX.

Occasionally the Sims position is preferred in repairing lacerations of the cervix.

The time most usually selected for operations on the cervix is from one to two weeks after the menstrual period.

Schroeder's Operation.—The patient having been prepared as for the former operation, the lips of the cervix are seized with two pairs of vulsellum forceps and drawn apart. A portion of the inner side of each lip is then incised in the shape of an obtuse angle and all scar-tissue removed (see *a, b, c*, Fig. 109). Each lip is then turned in as in figure 110. The sutures are entered as shown in the dotted line in figure 109. This operation is recom-

mended in lacerations of the cervix where the condition is accompanied by uterine catarrh or subinvolution.

Simon's operation consists in dividing the cervix into two lips and taking a wedge-shaped piece out of each lip. The sutures are passed directly across from one side of each lip to the other. The operation is done to aid in reducing the size of the uterus in subinvolution, and for the removal of a cervix hypertrophied in its intravaginal portion. Amputation of the cervix can be accomplished also by the galvanocautery and by circular amputation.

The *after-treatment of cervical operations* consists in giving one mild, antiseptic vaginal douche immediately after the operation, and in some cases, where there is oozing, lightly packing the vagina with gauze. An antiseptic vulvar pad and T-bandage complete the dressing. Unless specially indicated, no other vaginal douches need be given. The bowels should be moved daily, and if possible the bladder should be emptied voluntarily.

ENDOMETRITIS.

Definition.—An inflammation of the lining membrane of the uterus.

Varieties.—Endometritis may be either acute or chronic.

Acute endometritis is divided into—

1. *Cervical*, in which the mucous membrane of the cervix only is involved.
2. *Corporeal*, in which the mucous membrane of the body only is inflamed.
3. *General*, in which the entire endometrium is inflamed. The latter is the most common form.

Causes.—

1. Taking cold, either just before or during menstruation.
2. Sepsis from the hands of physicians or nurse being unclean at the time of a vaginal examination, from instruments not properly cleansed, or neglected labors.
3. Gonorrhea.
4. From the continued fevers, nephritis, tuberculosis, or variola, etc.

5. Excessive venery.
6. May follow simple or specific vaginitis.
7. Bad lacerations of the cervix.

Pathology of Acute Endometritis.—This type of endometritis is seldom seen before puberty. Scanzoni considers it an acute catarrh of the uterine mucous membrane, accompanied by a congestive swelling of the muscular substance. Frequently it is possible to see with the naked eye that the vessels are gorged with blood. This is greatest in the internal layers of the uterus. From this congestion results an infiltration and softening, these being greatest in the layers of the parenchyma nearest to the mucous membrane. The epithelium is destroyed and thrown off. A marked secretion, at first serous, later purulent or composed of pus mixed with blood, is generally found.

Symptoms.—A sensation of pain and weight in the pelvis; pain in the loins, legs, and back. A slight rise of temperature. There may be diarrhea and vesical irritability. The discharge is a marked feature; it is at first profuse, thin, and watery (leukorrhea), but later becomes thick like the white of an egg. The latter is particularly the case where the inflammation is principally cervical. Disorders of menstruation are apt to be present. In gonorrheal endometritis the symptoms are much more intense, the discharge often assuming a greenish hue. Gonococci may be found on microscopic examination.

Physical Signs.—The cervix, body, or whole uterus will be found by bimanual examination to be enlarged according to the seat of inflammation. The intravaginal portion of the cervix is swollen and the os frequently gaping and eroded. Issuing from it, and possibly partly filling the upper part of the vagina, is a tenacious, sticky, white or yellowish-white discharge. This discharge may be acid or alkaline, and is usually quite irritating in its action. Examination should be made by vaginal touch, bimanual palpation, and by exposing the cervix with a Sims or other speculum. The sound should never be used. Great care should be taken as to aseptic cleanliness.

Diagnosis of Acute Endometritis.—As the appearance of the cervix may somewhat simulate pregnancy, the history of the patient must be taken into consideration. The absence

of the usual subjective and objective signs of pregnancy and the presence of those of simple inflammation will serve to exclude gestation.

From Pelvic Inflammation.—In pelvic inflammation the uterus is fixed and the peri-uterine tissue is hardened. Considerable tenderness will be found by bimanual examination *around* the uterus. In *acute endometritis* the uterus is movable, the body is but slightly tender, and there is no extension of pain to the surrounding tissue.

The constitutional disturbance in pelvic inflammation is also much more marked.

Complications.—Acute parenchymatous metritis with extension of the inflammation through to the tubes and ovaries.

Parametritis, by extension of the inflammation through the uterine tissue to the cellular tissue surrounding it.

Perimetritis, by the inflammation extending to the peritoneum above the uterus.

Pelvic Peritonitis, Vaginitis, and Urethritis.—The discharge may also excite various irritations about the vulva.

Treatment.—Absolute rest is the first consideration. Hot fomentations or an ice-bag over the uterus. Saline laxatives in \mathfrak{z} j doses repeated so as to drain the pelvic vessels thoroughly. When pain is great, opium in small doses may be given. The diet should be light, consisting of such articles as beef-tea, chicken-broth, or milk. Large injections of hot water containing borax in the strength of about \mathfrak{z} j to the quart are highly recommended. These should always be given with the patient lying on her back, with hips slightly elevated. Some authorities recommend the application of leeches over the abdomen and the scarification of the cervix. Applications of silver nitrate in solid form, or other caustics, should be avoided. As soon as the acute symptoms have subsided, the cervix should be dilated, the cavity curetted with a sharp curet, and washed with a mild antiseptic, such as creolin \mathfrak{z} j to the quart, and packed with iodoform gauze. When the patient is anemic, such remedies as quinin, strychnin, arsenic, and nourishing foods are indicated.

CHRONIC ENDOMETRITIS.

Varieties.—Many classifications of this disease are given; the author has taken that given by Pozzi as being about the simplest.

Pozzi's Classification of Chronic Endometritis.—

1. Chronic interstitial.
2. Chronic glandular.
3. Polypoid.
4. Exfoliative.

The endometrium of the cervix, body, or entire uterus may be involved in chronic endometritis.

Principal Pathologic Characteristics of the Four Varieties.—

Chronic Interstitial Form.—The interglandular tissue is transformed into true cicatricial tissue, which gradually increases, compressing the glands, which become atrophied or are transformed into cysts.

Chronic Glandular Form.—Pozzi describes two forms of this variety. In the first there is hypertrophic proliferation of the glandular epithelium without a corresponding increase in the number of glands. In the second, the hyperplastic form, there is an increase in number of the glands themselves.

Polypoid Form.—This is described as a mixed form, both interstitial and glandular, with considerable cystic degeneration. There is great development of the mucous membrane, which may assume a fungous appearance and is generally covered more or less with polypoid structures varying in size. These are easily felt with the examining finger. Considerable hemorrhage is apt to accompany this form.

Exfoliative.—Endometritis dessicans. Decidua menstrualis. (See also *Membranous Dysmenorrhea*.) In this variety, at the menstrual period, the whole or a part of the endometrium is thrown off, sometimes as shreds; at other times an entire cast of the interior of the uterus. This expulsion is accompanied by severe pains, like those of labor.

Causes.—

1. Continuance of acute puerperal or nonpuerperal endometritis or of simple or specific vaginitis.

2. Incomplete removal of the placenta after miscarriage or labor.
3. Badly managed labors.
4. Traumatism from sounds, pessaries, caustics, etc.
5. Getting up too soon after confinement.
6. Subinvolution.
7. Uterine displacements, malformations, or cervical stenosis preventing the escape of menstrual blood; lacerations of the cervix.
8. Exposure to cold at time of menstruation.
9. Depleted conditions of the blood or nervous system.
10. Frequent parturitions and abuse of sexual intercourse.
11. Tumors of the uterine cavity.

Symptoms.—A heavy, dragging pain in the lumbar region and in the loins, continuous, but increased by standing, sitting, or walking, especially if the patient makes a misstep. There may be pain down the thighs and between the shoulders. Vague pains may also be felt in other parts of the body. Headache in the front or top of the head is not uncommon. Leukorrhea is a constant symptom; the discharge may be thin and almost clear, or thick like the white of an egg. When from the body of the uterus, the discharge is usually thin; while that from the cervix is thick. The discharge may also be yellowish or greenish when pus is present. Various menstrual disturbances may appear. Menorrhagia and metrorrhagia are especially apt to be present in the chronic interstitial form. Amenorrhea may appear when there is great debility. Dysmenorrhea may also be present and is a prominent symptom in the exfoliative variety. Various vague nervous symptoms are frequently seen in these patients. Dyspepsia is frequently present. Neuralgia is a common sequel.

Physical Signs.—Bimanual examination shows the uterus enlarged, somewhat sensitive to the touch, but freely movable in cases uncomplicated by peri-uterine inflammation. When touched, the os and cervix may feel somewhat like velvet. Inspection will show the cervix enlarged, and of a dark-red or violet color. When laceration of the cervix exists, the os shows increased granulations and small cysts about it. In the chronic catarrhal form the cervix is frequently greatly elongated (hypertrophic elongation),

and may extend nearly to the vaginal orifice. Examination with a clean sound will generally show the cavity enlarged, and will demonstrate by their increased sensitiveness the inflamed areas of the mucous membrane. In the polypoid variety the sound will show the presence of the small growths as smooth or less movable eminences above the surface of the mucosa. When the cervix is affected, polypi, either pedunculated or sessile, may be seen projecting from it. As the sound is withdrawn, a little blood or bloody mucus may come away with it. The reddened areas around the os seen through the speculum are known as *erosions*, and are formed by changes in the epithelium of the cervix; when these are deep, they are sometimes called *ulcerations*. Erosions are described as being—

1. Simple.
2. Follicular.
3. Papillary.
4. Cystic.

Complications of chronic metritis may be metritis or salpingitis. From extension downward, vaginitis. Peritonitis may occur when inflammation extends through the uterine body. Permanent displacement may occur.

Treatment of Chronic Endometritis.—

Prophylactic.—After labor or miscarriage, see that all fragments of the placenta and blood-clots are thoroughly removed, and that the uterus is clean. When constitutional disease exists, it must be treated, and the general system kept in as good condition as possible. Instruments used in examination should be kept absolutely clean and aseptic.

The Treatment of Existing Endometritis.—Rest; draining the pelvis as much as possible by saline purgatives. Copious injections of hot water, either plain or medicated, are very useful. These injections should always be given with the patient lying down. Vaginal tampons made of cotton or gauze, and saturated with glycerin and borax and applied to the cervix through a speculum, will often afford great relief. Applications of iodine or iodized phenol to the endometrium, to the cervix, and upper part of the vagina are useful in mild cases. Hot sitz-baths and the administration of the fluid extract of ergot and *hydrastis canadensis*, in

fifteen-drop doses each, three or four times a day, are useful adjuncts. When, after a fair trial of these means, relief is not afforded, the cervix should be dilated with solid graduated or parallel dilators, and the diseased endometrium removed with a sharp curet. After this has been done the uterus should be washed out with an antiseptic solution (this is unnecessary where a douche curet has been used) by means of a double-current catheter. The interior of the uterus should then be swabbed out with iodine, a combination of iodine and potassium iodide, or iodized phenol. Many gynecologists prefer simply packing the uterus with iodoform gauze after curetage. This packing is removed in from two to three days. A sterilized pad held in place by a T-bandage completes the dressing. Care must be taken that the vagina is thoroughly clean before curetage is attempted. Existing acute inflammation is a contraindication to the use of the curet. The operation should be done under anesthesia; the patient should remain in bed for several days afterward.

Lacerations of the cervix should, of course, be repaired by one of the operations before described.

In chronic interstitial endometritis with hypertrophic elongation of the cervix the cervix should be amputated. If there is eversion of the mucous membrane of the cervix (ectropion) with cystic formations, the latter should be evacuated. Scarification of the cervix is also recommended by some. Rest during the menstrual period and abstinence from sexual intercourse should be insisted on.

METRITIS.

Definition.—Metritis is an inflammation of the parenchyma of the uterus, as distinguished from that of its mucous linings or serous coverings (*Craigie*). Metritis may be acute or chronic.

ACUTE METRITIS.

Synonyms.—Acute inflammatory metritis; acute parenchymatous metritis.

Causes.—Mostly infectious in origin. May arise—

1. From postpuerperal endometritis, either through streptococ-

cus infection or from gonorrhea. May arise from the use of unclean instruments or manual examinations.

2. From infection of placental fragments and clots.

3. Exposure to cold during menstruation.

4. Sexual excesses.

5. Acute peritonitis.

6. Lacerated cervix.

7. Acute fevers, nephritis, tuberculosis. Any cause producing inflammation of the endometrium may, by extension of this into the parenchyma of the uterus, cause metritis. Acute metritis rarely exists independently, but it is nearly always associated with endometritis or peritonitis.

Pathology.—The uterus enlarges and becomes softened. The enlargement is especially noted in the anteroposterior diameter. According to Pozzi, the mucous membrane is soft and thickened; examined by the microscope, the glandular structures are not altered, but the interglandular tissue undergoes particular metamorphosis. The cells appear in much greater numbers than normally, and they are so pressed against one another that there remains but little space for the intercellular substance. They present their normal size and in this respect differ from the cells of the decidua as well as by the small quantity of their protoplasm. He considers it an acute interstitial inflammation. Purulent infiltration of the muscular bundles may also occur (*Hart and Barbour*). The peritoneal investment of the uterus may share in the inflammation, becoming covered with lymph. Rarely, abscesses may occur in the uterine walls; these may break into the uterus, vagina, bladder, rectum, or into the peritoneal cavity. These abscesses occasionally become encapsulated and undergo caseous degeneration.

Symptoms.—Acute uterine inflammation usually begins with a chill, more or less severe, followed by fever and rapid pulse. Pain is present and may be over the uterus, in the hypogastrium, or in the lumbar and iliac regions, especially in the left. There may be present also nausea and rectal and vesical irritation. On examination, the uterus is enlarged, soft, and very tender, but, unless the surrounding tissue is involved, the organ is freely movable. Examination with a sound should not be made.

Menorrhagia and metrorrhagia are usually present; the menstrual function may, however, be entirely suppressed.

Treatment.—If seen early, put the patient to bed and keep her in a state of absolute quiet. An ice-bag, ice-poultice, or ice-water coil should be placed on the abdomen over the uterus. Later, hot applications or turpentine stupes act rather better than cold.

If the condition is due to retained septic secundines, these should be removed by a *dull* curet, and the uterine cavity thoroughly washed out with a mild antiseptic solution. Uterine suppositories of iodoform, thirty to sixty grains, may be inserted after irrigating. The douche should always be given through a return-flow catheter or douche curet. The bowels should be kept open by salines or enemata. Opium in small doses may be given for the pain, and may be administered by mouth or rectal suppositories. Leeches over the abdomen are recommended by some, to the cervix by others. After the acute stage has passed, copious hot-water douches to the vagina and glycerin tampons—the former applied every day, the latter three or four times a week—do good.

CHRONIC METRITIS.

Synonyms.—Chronic parenchymatous metritis; areolar hyperplasia (*Thomas*); chronic parenchymatous inflammation of the womb (*Scanzoni*).

Varieties.—Hemorrhagic, catarrhal, and chronic painful (*Pozzi*).

Causes.—Any cause producing the acute forms either of endometritis or metritis may, by its continuance, produce chronic metritis.

Pathology.—According to Pozzi, the principal lesion is hypertrophy of the connective tissue of the uterus, which generally causes an increase in the size of the organ; occasionally, however, it decreases in size.

Symptoms.—The symptoms generally date from childbirth, miscarriage, or from an attack of pelvic peritonitis. There is a continuous heavy dragging pain in the groins, above the pubic bone, and in the lumbar and sacral region. These pains may be reflected down the thighs, both on the anterior and posterior sur-

face, and in various parts of the body. Headache is a prominent symptom. Leukorrhea, menorrhagia, and dysmenorrhea are usually present. The other symptoms are irritability of the bladder and rectum, vague neuroses, abortion, and sterility.

Physical Signs.—The uterus is enlarged and somewhat tender in the early stages, but as the disease becomes chronic the organ hardens and may possibly become somewhat irregular in shape. The cervix may be distinctly lengthened. The cervical canal is generally enlarged and the os patulous. Very frequently the uterus is found retroverted or retroflexed, the latter particularly if the metritis has existed some time. Often the uterus will be more or less fixed by adhesions.

Differential Diagnosis.—*Malignant disease* may be distinguished by the later period of life at which it occurs, the rapid and progressive degeneration in health, the peculiar color of the skin, the intense characteristic pain, and the foul-smelling discharge. Vaginal examination will not disclose, in metritis, the softened issue of cancer—which so easily breaks down under the finger—and hemorrhages, which often follow examination. Microscopic examination will make the diagnosis certain.

Fibroids can be distinguished by their irregular shape. The uterus lacks here the regular soft enlargement of metritis. The sound can often detect a fibroid when in the cavity.

Early Pregnancy.—The jug-like shape of the body of the uterus can be felt through the vaginal vaults in pregnancy. It enlarges constantly from week to week. There are changes in the breasts, and in the mucous membrane of the vagina, and cessation of menstruation. The cervix is softened in pregnancy. The general condition of the patient is better than in metritis. There is no tenderness over the uterus.

Treatment.—

1. *Prophylactic.*—The careful and aseptic practice of obstetrics will do much toward preventing uterine inflammation. As much scientific care should be given to a woman after confinement as is given a patient recovering from a capital surgical operation.

2. *Curative.*—Endeavor to increase the patient's general health by tonics, such as arsenic, quinin, strychnin, and iron. A good formula is the following :

℞. Sulphate of strychnin,
 Arsenious acid, aa gr. $\frac{1}{30}$
 Tartrate of iron and potassium, gr. ij
 Sulphate of quinin,
 Pepsin, āā gr. j.
 Made in a capsule or pill and taken after each meal.

In nervous subjects a pill composed of one grain each of valerianate of iron, quinin, and zinc gives excellent results. The patient should lie down an hour or two each day, especially during the menstrual period; many of these cases do well to remain in bed during the whole of this time. Massage and a full diet systematically given do good. The pelvis should be well drained through the bowels by salines and mild cathartics. Where subinvolution or hypertrophic elongation of the cervix exists, trachelorrhaphy by Emmet's or Schroeder's method, or Markwald's amputation, will give good results. In other cases prolonged vaginal injections of hot water, tampons of glycerin, boroglycerin, or glycerin and ichthyol, combined with applications of iodine to the cervix and vaginal vaults, accomplish much.

Scarification of the cervix is recommended by some. Apostoli recommends galvanism in these cases. When endometritis is a prominent factor, curet and apply iodine, or pack the cavity with iodoform gauze. Menorrhagia, metrorrhagia, or dysmenorrhea should be treated as in other cases.

TUMORS OF THE UTERUS.

FIBROID TUMORS (FIBROMATA).

Pathology.—Fibroid tumors are localized hypertrophies of the parenchymatous tissue of the uterus. Microscopically, both the fibrous and muscular elements are in excess, the former usually predominating. They may be attached to any part of the uterus, and may be single or multiple. Fibroids are subject to various changes, such as: (1) Spontaneous atrophy. (2) Myxomatous, (3) cystic, (4) fatty, and (5) calcareous degenerations. (6) They may soften and slough or become gangrenous. (7) According to Virchow, the uterine attachment of certain fibroids may undergo a

species of varicose degeneration, which causes the tumor to resemble erectile tissue. These are known as *telangiectatic tumors*. (8) Rupture of the small blood-vessels within the mass may occur, causing apoplexy. (9) A distention of the intercellular lymph-spaces, known as *lymphangiectasis*, is also described. (10) Malignant degeneration may take place.

Varieties.—Fibroid tumors of the uterus are classified as follows :

1. *Interstitial, mural, or central*, when the tumor begins and continues its growth in the *muscular wall*, enlarging equally to-



FIG. III.—SUBSEROUS FIBROID.
(One-half size.)



FIG. II2.—INTERSTITIAL FIBROIDS.
(One-half size.)



ward the mucous and peritoneal surfaces. Fibroid tumors generally begin in this way.

2. *Subserous, extramural, excentric, or subperitoneal*—if the growth is toward the peritoneal cavity, under the peritoneum.

3. *Submucous, intramural, or concentric*—if the growth is toward the cavity of the uterus and under its mucous coat. When the tumor grows from a broad base, it is known as a *sessile fibroid*; when attached by a slender stem, it is called *pedunculated*. This latter is also known as *fibrous polypus*. Submucous fibroids are occasionally classified, by their position, as intrapelvic, intra-abdominal, intraligamentous, etc.

Fibroids may also be “free” or “encapsulated.”

Consequences.—

1. All forms of uterine displacements, including inversion.
2. Rarely, the pedicle of a subperitoneal fibroid may break, allowing the tumor to roll freely in the abdominal cavity.
3. They may be detached from the uterus and attached to some other abdominal viscus (*Thomas and Mundé*).
4. Fatal results may occur from (*a*) sepsis, (*b*) hemorrhage, (*c*) pressure, (*d*) embolism, (*e*) ulceration, (*f*) gangrene, or (*g*) inversion of the uterus.

Causes.—The cause is often very obscure. They occur most often in women from thirty to forty-five years of age; nulliparity and long-standing menstrual disorders seem to predispose. Race appears to be a factor in the causation, the negro being more often affected than the white race. Fibroids are said to occur in about forty per cent. of women over thirty-five years of age.



FIG. 113.—SUBSEROUS AND SUBMUCOUS FIBROID.
(One-half size.)

Symptoms and Complications.

—It is quite possible for a slow-growing fibroid to cause no distinguishing symptoms. The common symptoms are:

1. Menorrhagia and metrorrhagia.
2. Leukorrhea.
3. Pain, especially at the menstrual periods, when the tumor shares in the general uterine congestion.
4. Endometritis generally accompanies.
5. The tumor may press on the sacral nerves, causing pain; or on the rectum, causing tenesmus, constipation, or other symptoms due to retention of feces. The functions of the bladder may be interfered with. Pain is generally most marked in the subserous variety, while hemorrhage is greater in interstitial and submucous fibroids. Complications, such as ovarian enlargement, peritonitis, ascites, fatty liver, various neuroses, nephritis, and cardiac hypertrophy, are occasionally met with. Fibroids increase in size during menstruation, probably share in the retrograde metamorphosis of the uterus after delivery, and often either atrophy or undergo various degenerations after the menopause.

Diagnosis.—In cases of *submucous* fibrous polypus a mass will be found protruding from the cervix. (See differential diagnosis between fibrous polypus and inversion of the uterus, page 148.)

(a) *Subserous fibroids* can be diagnosticated—

1. By their irregular outline, demonstrated by bimanual examination.

2. By the pain, which is greatest in this variety.

3. The hemorrhage is less in this than in the *submucous* variety.

4. The sound enters the uterine cavity, which is empty and frequently elongated.

5. Pressure symptoms may aid in the diagnosis. This variety is apt to be multiple. They are to be differentiated from uterine displacements. (See chapter on Displacements.)

(b) *Interstitial and submucous fibroids* can be diagnosticated—

1. By the accompanying menorrhagia and metrorrhagia.

2. The more even enlargement of the uterine body.

3. The sound will usually demonstrate the position of the growth, with the depression in the uterine mucous membrane opposite the point of attachment.

4. The uterine canal is tortuous. Frequently the cervical canal must be dilated and the cavity examined by the finger.

5. In the interstitial variety microscopic examination of shreds removed by the curet may aid in the diagnosis.

(c) *Fibrocysts*.—The cystic degeneration of a fibroid occupies considerable time. Percussion over the tumor may give the vibration of fluid, or coils of intestine in front of them may give a tympanitic note. The patient's health is not much affected. Fibrocysts, as a rule, do not cause profuse menstruation.

Differential Diagnosis.—Fibroid tumors of the uterus are to be differentiated from—

1. Para-uterine cellulitic deposits.

2. Pelvic hemocele.

3. Ovarian tumors.

4. Pregnancy.

1. *Para-uterine cellulitic deposits* show a history of a febrile condition, a sudden onset, and the fixation and sensitiveness of the uterus.

2. *Hemocele* shows itself in a sudden appearance, the tumor

being immovable and sensitive. The tumor is at first semifluid; later it may be tympanitic.

3. *Ovarian Tumors*.—Vaginal touch and the use of the sound will show that the tumor is not attached to the uterus. Percussion of the abdomen will give fluctuation. There is generally more deterioration of health. Solid ovarian tumors adherent to the uterus are almost impossible to differentiate.

4. *Pregnancy*.—There is amenorrhea. The tumor is symmetric, softer, and of more regular growth. In doubtful cases the development of fetal heart-sounds and movements will settle the diagnosis.

5. *Tubal disease* can be excluded by the shape of the tumor, the great tenderness and lessened mobility of the uterus.

6. The area of displacement of a *floating kidney* will appear above the pelvic brim, while that of a fibroid below the inlet. The differentiation between fibroids and uterine displacements has been given elsewhere.

Treatment.—The treatment may be divided into non-operative and operative. The former may be subdivided into—

(a) Palliative.

(b) Treatment by ergot.

(c) Electricity.

(a) *Palliative*.—Symptoms due to pressure of the uterus on surrounding parts and to displacements should be treated by restoring the uterus to its normal position and retaining it by a suitable pessary, tampons, or abdominal pad. For the hemorrhage, rest at the menstrual periods; the administration of ergot, either alone or combined with *hydrastis canadensis*; *cannabis indica* or *viburnum prunifolium* in doses sufficient to check the hemorrhage to the normal amount of menstruation. Tampons of cotton soaked in a solution of alum, gallic or tannic acid may be useful. For anemia give tonics and a good diet; keep the liver, skin, and kidneys active, and avoid constipation.

(b) *Ergot treatment* may be practised in all varieties except fibrocysts. In subserous fibroids it will cause the tumor to shrink; in the submucous and subserous varieties it may aid also in expulsion. The "American Text-book of Gynecology" recommends a solution of Squibb's aqueous extract of ergot 1 : 10, with one

grain of salicylic acid to each half-ounce of the solution. Careful sterilization of both solution and syringe is necessary. During a prolonged course of this treatment strychnin or nux vomica should be given to counteract the depressing effects of the ergot on the heart. The dose of ergot at the beginning should be about one grain a day and increased weekly until pain is felt in the uterus. Hydrastis in doses of twenty minims is also recommended.

(c) *Electric*.—The methods of Apostoli are generally employed. The student is referred to special works on electrogynecology.

OPERATIVE METHODS.

The following operations are used for the removal of fibroid tumors :

Vaginal Operations.—(1) Dilatation or splitting of the cervix so as to render the tumor accessible ; (2) torsion ; (3) vaginal enucleation ; (4) morcellement ; (5) vaginal hysterectomy ; (6) ligation of the uterine arteries.

Abdominal Operations.—(1) Myomectomy, (2) supravaginal hysterectomy, (3) ligation of the ovarian arteries and their anastomoses, (4) castration.

Vaginal Enucleation.—This operation is indicated in sub-mucous or interstitial fibroids, when the latter are covered by but a small amount of muscular tissue. The tumor must not be too large to pass through the pelvis, *i. e.*, not larger than the fetal head. The patient is prepared as for hysterectomy. The operation is generally done with the patient in the dorsal position. The cervix must have been dilated by gauze tents or solid dilators previous to the operation, the dilatation being completed by *incision* or *splitting the cervix* if the canal is not sufficiently large. In the latter case the vaginal arteries may be tied. The capsule of the tumor is seized with a pair of bullet forceps and incised with a scalpel. The tumor is then loosened from the capsule with the finger or blunt-pointed scissors, after which it is grasped with the forceps and steady traction made on it, while with the scissors it is separated from its attachment to the uterus and delivered *per vaginam*. All loose pieces of capsule are then cut away. A digital examination of the uterus should be made to ascertain if any damage has been done, after which it is washed out and

packed with iodoform gauze to prevent hemorrhage. The after-treatment consists of rest, aseptic irrigation, and, if necessary, gauze packing. Ergotin should be given by the mouth or by hypodermic injection.

Morcellement, or Avulsion.—The patient is prepared as for the previous operation. The cervix is dilated and the capsule or mucous membrane covering the tumor incised. A pair of avulsion forceps are then passed in and a portion of the tumor seized and twisted off by a rotary motion of the instrument. This is repeated until the whole tumor is removed. The instrument should be guided by a finger of the other hand in the uterus. After removing the whole tumor the uterus is washed out and packed with gauze.

Myomectomy (Martin's).*—Preparatory to the operation the



FIG. 114.—AVULSION FORCEPS.

vagina and uterine cavity should be irrigated with a five per cent. creolin solution and the uterus packed with sterile gauze.

Incise the abdomen in the linea alba and bring the uterus up through the incision. A thin pad of sterile gauze is placed beneath it and gauze or towels are packed close around the lower part of the uterus and well down into the incision, so as to prevent contamination of the abdominal contents. A ligature of rubber or gauze is now thrown about the uterus, below the tumor, and tied before the uterine incision is made. The incision of the uterus is usually made on the anterior wall, away from the pedicle, and in the long axis of the uterus. It should begin just below the fundus, and should extend down to the cervix. Occasionally the incision

* The method here given is that described by Kelly, of Baltimore (Kelly's "Gynecology").

is made across the fundus. The gauze in the uterus is now removed with forceps and fresh gauze packed in to protect the margins of the incision, while the tumor is grasped with a sterilized towel or piece of gauze and pulled from its base by tension, or it may be removed by incising its capsule and pulling it out. Do not let the tumor or any of the uterine contents touch the edges of the incision. After removal of the tumor the uterine incision is closed by catgut sutures placed about one centimeter apart; these should enter and emerge about $\frac{1}{2}$ of a centimeter from the margins of the incision. The suture should be carried

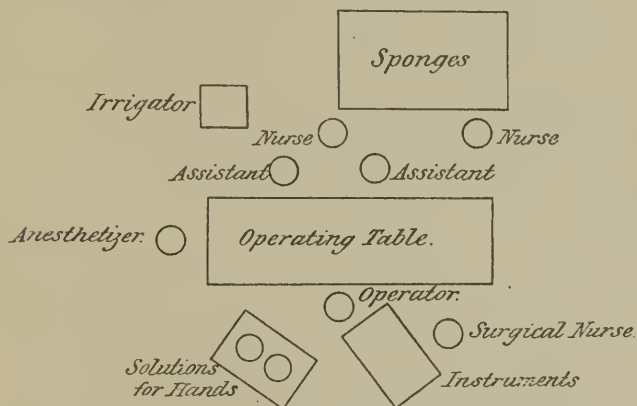


FIG. 115.—ARRANGEMENT OF OPERATING-ROOM.—(Byford.)

down to, but not into, the mucosa. After the deep sutures are tied, approximation should be completed by sutures of chromicized catgut passing five to eight millimeters into the tissues. The gauze pads are now removed, the uterus replaced in anteflexion, and the abdomen closed.

Supravaginal Hysterectomy, Abdominal Hysterectomy, Hysteromyomectomy.*

Indications.—When the life or health of the patient is threatened

* The method here described is that used by Kelly, of Baltimore. Various operators, however, differ slightly in their technic.

either by the rapid growth or large size of the tumor causing obstruction or interference with the functions of surrounding organs.

Preparatory Treatment.—The patient should be under observation either at her home or in a hospital from one to two weeks before the operation. She should receive good, nourishing food and tonics. The bowels must be moved every day and the skin and kidneys kept active by baths, massage, and diuretics. The methods for the preparation of the patient, surgeon, assistant, and room have been given elsewhere.

At the time of operation she should be dressed as for bed, the legs covered with a pair of warm stockings. The operator and assistants should dispose themselves as in the diagram. The Trendelenburg posture is most generally used.

The abdomen and vagina having been rendered aseptic, the operation is done in the following steps:

1. *Incision in the median line*, two and one-half to eight inches in length, over the most prominent part of the tumor. The peritoneum is carefully incised, preferably at the upper end of the abdominal incision. The position of the fundus of the uterus is determined by a sound therein. A hand is introduced to determine the presence of adhesions, etc.

2. *The tumor, with the uterus, is delivered* upon the abdomen and a warm gauze pad placed under it, covering the intestines.

3. *Ligation of the ovarian vessels and round ligament of one side.* The ovarian artery is tied off with a fine-silk ligature. A second ligature of the same material is passed four or five centimeters from the first and toward the uterus, and the artery is cut between the two, but nearer the uterine ligature. In women under forty years of age ovariectomy should not be performed; in this case the first and last ligatures are applied near the horn of the uterus. The round ligament is tied with catgut, the uterine end being clamped.

4. *The uterus is drawn back and the uterovesical peritoneum cut through from one round ligament to the other.* The bladder is now raised, all surrounding cellular tissue freed, and the uterine vessels exposed and ligated with silk carried in a large, curved needle. These ligatures are passed close to the cervix. The uterus is drawn over and amputation begun by cutting through the

uterine vessels six to ten millimeters above the ligature. The cut vessels above, on the tumor side, should be clamped or tied *en masse* to keep the blood from obscuring the field of operation. The cervix is now completely divided just above the vaginal junction. A pad is placed below the upper cut surface to prevent any intra-uterine fluid escaping upon the wound and the lower cervical canal is wiped out.

5. *Ligation of the ovarian and uterine vessels and round ligament of the opposite side, with removal of tumor and uterus.* All vessels controlled by forceps are now tied, (a) those of the round ligament with catgut, (b) the ovarian vessels with silk. The uterine vessels are drawn up and tied, care being taken to avoid the ureters.

6. *Suture of the stump.* Minute vessels are to be tied with fine catgut. The stump is closed over the cervical canal by passing three to five catgut sutures in an anteroposterior direction. The mucous membrane of the canal must not be included.

7. *A large flap of peritoneum, anterior to stump,* is drawn over the latter and sutured to the posterior peritoneum from side to side by a continuous intermediate catgut suture, the suture being started at the stump of the ovarian vessels.

8. *One or two liters of normal salt solution* may be placed in the cavity and quickly sponged out.

9. *The abdomen is closed without drainage.*

Extraperitoneal or Extra-abdominal Method (Hegar's).—The technic as regards the incision, ligation of the vessels, and amputation of the uterus is the same as in the method before described. The treatment of the stump is as follows: Before incising the uterus two transfixion pins are passed at right angles to each other, completely through it, just above the ligature or écraseur wire. The uterus is amputated about an inch above the pins.

The two sides of the stump are brought together and stitched. The peritoneum is closed by stitching it to the serous surface of the pedicle below the wire by a single suture of catgut or silk, that of the pedicle being closed by drawing it over the stump by a continuous, whipped, silk suture. The abdominal cavity is thoroughly cleansed and dried. The stump is drawn into the lower end of the abdominal wound, which is closed by interrupted sutures of

silk-worm gut, these being passed through all the tissues but the serosa. Small rolls of gauze are usually placed between the transfixion pins and the skin of the abdomen.

The stump is then dusted with iodoform and covered with iodoform gauze. Mummification of the stump is complete in from two to three weeks. When the stump is well cicatrized it is allowed to drop into the abdominal cavity. The abdominal dressing after

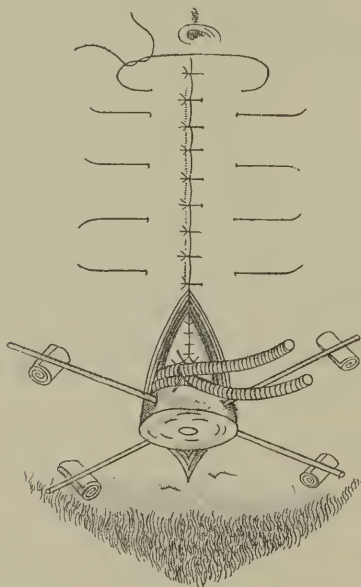


FIG. 116.—SUTURE OF THE ABDOMINAL WALL ABOUT THE PEDICLE.

hysterectomy consists of dusting the wound with some dry antiseptic powder, such as acetanilid, boric acid, or iodoform, and covering with several thicknesses of sterile gauze. This in turn is secured by a three-tailed abdominal binder. To avoid the danger of ventral hernia, patients should remain in bed from six weeks to two months after the operation and should wear afterward an abdominal pad.

Total Abdominal Hysterectomy.—(1) The patient is prepared as for celiotomy and, in addition, the vagina should be thoroughly cleansed and a loose packing of iodoform or sterile gauze inserted. The Trendelenburg posture is used. (2) If the operation is done for carcinoma, the cervix should be closed with sutures of sterile silk to prevent infection. (3) Kelly recommends that catheters be inserted into the ureters previous to anesthetizing the patient, so that the ureters will by this means be more easily distinguished during the operation. (4) The abdominal incision is the same as for other abdominal operations. (5) A broad pad of several thicknesses of sterile gauze or a carefully aseptitized elephant-ear sponge may be inserted through the wound, to keep the intestines away from the field of operation and to absorb secretions. The tumor is then drawn up and any adhesions carefully separated. (6) The ovarian vessels and round ligaments are now ligated with sutures of stout silk passed through the broad ligament well out toward the pelvic brim. A second line of sutures may be placed on the side of the broad ligament next the uterus or the uterine side may be secured by a clamp. (7) The uterus is drawn somewhat upward and to the opposite side, and the broad ligament incised from the top downward between the ligatures and clamps (or between the two lines of ligatures) as far as a point on the cervix corresponding to the internal os. (8) The same process is repeated on the opposite side. (9) The uterus is now drawn up and the vesico-uterine fold separated first by incision across the anterior surface of the uterus, and by gently pushing down the vesical peritoneum with a scalpel-handle or a sponge, thus detaching the uterus from the bladder and separating the latter down to the vaginal vault. All bleeding vessels are to be caught with forceps and tied with catgut. Great care must be used not to injure the bladder. (10) The uterine vessels are now isolated and ligated with silk passed by means of an aneurism or Deschamp's needle, and are cut about $\frac{1}{2}$ of a centimeter beyond the ligature. Kelly recommends that the uterine artery be ligated at its points of origin from the anterior branch of the iliac artery. This is repeated on the other side. Care must be taken not to include the ureters in the ligature or to injure their blood-supply. All large pelvic veins are to be ligated with double ligatures and the cellular tissue detached to the

vaginal vault. (11) The knife-blade of a thermocautery at dull heat or a scalpel is made to encircle the cervix, thus opening the vaginal vault. All bleeding vessels are clamped and tied with catgut and the uterus separated and removed. (12) The pelvic cavity is now thoroughly cleansed with sterilized water and examined, and a loose packing is inserted into the vaginal opening to absorb secretion, or the mucous membrane of the vagina may be united by a continuous catgut suture. (13) The anterior and posterior flaps of peritoneum bordering the wound are brought together by a continuous catgut suture. (14) If any doubt as to infection exists, the abdominal cavity should be washed out with sterile normal salt solution. (15) The abdominal incision should be closed with three layers of sutures (peritoneum, fascia, and skin). (16) A light pack of iodoform gauze is passed up through the opening in the vaginal vault, to support the peritoneum and act as a drain; the vagina itself should be lightly packed and the vulva covered with an occlusion dressing.

The after-treatment consists in feeding the patient as after ovariectomy, the urine being drawn by catheter for a day or two. After twenty-four hours the bowels are to be moved by salines supplemented by an enema. Unless a rise in temperature occurs, the vaginal dressing is to be renewed at the end of a week. The abdominal wound is to be treated in the usual manner.

Salpingo-oophorectomy.—This operation consists in the removal of the tube and ovary for the cure of fibroids. The abdomen is opened as in the former case. The ovary having been found and drawn into view, the blunt Deschamp needle is passed as close as possible to the uterus, care being taken not to wound the anastomotic coil between the ovarian and uterine arteries. One ligature is tied close to the uterine cornu in such a manner as to include the sympathetic nerve of the tube. The broad ligament is ligated below the ovary, the lock suture being employed. Both ovary and tube are removed. The operation is applicable only to cases of small pelvic growths and where the uterine appendages can be easily removed.

Operation for the Cure of Fibroids by Ligation of the Uterine Arteries.—Dr. F. H. Martin, of Chicago, has devised an operation for the cure of fibroids, the technic of which is

as follows: The patient having been antiseptically prepared and placed in the lithotomy position, the cervix is exposed by broad retractors. The mucous membrane of the vagina is then incised about $\frac{3}{4}$ of an inch from the cervix on the right and left sides of the vagina and at right angles to the broad ligament. The wound is about $1\frac{1}{2}$ inches in length. The finger is inserted into the left incision and the contents of the left broad ligament carefully dissected from its peritoneal covering behind and from the bladder in front. As soon as the uterine artery can be isolated, a ligature of No. 12 braided silk is passed around it and tied, the ends being cut short. If there are several branches, the artery must be ligated in two sections. The parts are thoroughly irrigated and the wound closed by catgut sutures. After performing the same operation on the right side, the vagina is again cleansed and loosely packed with iodoform gauze.

UTERINE POLYPI.

A polypus is a tumor attached to the uterine wall by a small pedicle.

Varieties.

1. Glandular.
2. Mucous.
3. Fibrous.
4. Placental.
5. Papillomata of the cervix.

Pathology.—The *glandular variety* consists of hypertrophied cervical *glands* filled with the viscid fluid normally secreted by these glands, and usually associated with a certain amount of hypertrophy of the whole mucous lining of the cervical canal (*Thomas and Mundé*).

Mucous polypi are usually multiple. They are *local* hypertrophies of the uterine mucous membrane, and are found most commonly in the cervix.

Fibrous polypi are small submucous fibroids attached by a pedicle. They take their origin within the uterus, frequently from the cervix, and are gradually forced out through the os by uterine contractions, thus becoming vaginal. They are composed of

fibrous tissue and a few blood-vessels. Their shape is ovoid or pyriform.

Symptoms.—Increased hemorrhage at first at the menstrual periods ; later the bleeding is continuous. If the polypus has been forced through the internal os there will be painful uterine contractions. Sterility, endometritis, and later anemia may result from loss of blood.

Physical Signs.—Examination with the finger will detect the pyriform tumor protruding through the os or extending into the vagina. If attached low down, the finger passed around the cervix will soon feel this point of attachment.

Uterine polypus may be confounded with inversion of the uterus. (For differential diagnosis see chapter on Inversion of the Uterus.)

Treatment.—When the polypus is attached inside the uterine cavity high up, the cervix should be dilated ; the tumor may be grasped in a pair of forceps and the pedicle twisted off, or the growth may be removed by galvanocautery or wire *écraseur*. If attached low down, a V-shaped incision can be made at the base of the pedicle in the mucous membrane and the tumor removed. The uterus may then be packed with iodoform gauze. Multiple polypi may be removed with a sharp curet. All these operations should be done under the strictest asepsis. Endometritis accompanying the condition should be treated as in other cases.

CANCER OF THE UTERUS.

Cancer of the uterus may appear as either carcinoma or sarcoma. Carcinoma arises from epithelium ; sarcoma from connective tissue. The disease may attack either the cervix or body of the organ, although the former is the more common seat.

Cancer of the *cervix* appears as *carcinoma*, pathologically divided into—

1. Epithelioma.
2. Encephaloid, medullary (or soft).
3. Scirrhus (or hard) carcinoma.

Another form of carcinoma is occasionally described as malignant adenoma. It consists of a reproduction of the tubular

glands of the body of the uterus, or of the branching cervical glands. It is rare.

Cancer of the body is usually the epithelioma or encephaloid carcinoma; it occurs later in life than cancer of the cervix, and is most common in unmarried or sterile married women. Sarcoma is more rarely found; when present it appears as either circumscribed fibrous sarcoma or diffuse sarcoma of the mucous membrane. Having once started, the disease may extend in three ways:



FIG. 117.—EPITHELIOMA AFFECTING ANTERIOR LIP OF CERVIX.

1. By continuous growth.
2. By the lymphatics; contagious cell elements being absorbed and carried through these glands.
3. By the venous system.

Causes.—

Race.—1. Malignant disease is very uncommon in the negro.

2. As predisposing causes are mentioned—hereditary tendency.
3. Repeated parturitions.
4. Erosions and lacerations of the cervix.
5. Habitual miscarriages.



FIG. 118.—EPITHELIOMA AFFECTING POSTERIOR LIP OF CERVIX.



FIG. 119.—EPITHELIOMA AFFECTING BOTH LIPS OF CERVIX, VAGINA, AND BLADDER.

6. Mental anxiety.
7. Traumatism.
8. Too frequent coition.

Little is known of the direct exciting cause.

Age, usually between the fortieth and sixtieth years, although it has been found as early as the thirteenth year.

Pathology.—*Carcinoma.*

(a) *Epithelioma (cauliflower growth), cancroid*, is usually found in the lining membrane of the cervix, beginning most frequently in the posterior lip as a superficial growth, not involving the connective tissue. The tissues of the cervix undergo infiltration with *epithelial cells* arranged in the form of trabeculæ. In the true cauliflower growth the hypertrophy of the papillæ of the cervix predominates, the cells being arranged in clusters or shafts. In cancroid no hypertrophy of the papillæ occurs. Macroscopically, it appears as a red, cauliflower-like mass, crumbling under the finger and bleeding profusely. The vagina may be involved secondarily, or the disease may spread to the body of the uterus.

(b) *Encephaloid, Medullary, or Soft Cancer.*—There is an excessive, diffuse proliferation of round, spindle, or caudate epithelium. The cervix is greatly enlarged, generally in the *supravaginal portion*, giving to the examining finger the sensation of a somewhat hard, nodular body, sometimes described as “turnip” shaped. There is less bleeding and ulceration than in the preceding form.

The parametrium does not become involved until late in the disease.

(c) *Scirrhus, or hard cancer*, appears in the parenchyma of the cervix; many authorities deny that it is ever found in the body of the uterus. It is characterized by a hyperplasia of the *fibrous stroma*. The cervix is much enlarged, very hard and nodular, giving to the examining finger the feel of cartilage. No erosions can be found early in the disease, and little or no hemorrhage follows examination. Both encephaloid and scirrhus spread more rapidly than epithelioma, and produce metastasis.

In the late stages of cancer, when ulceration has occurred and the tissues break down, the three forms can not be distinguished.

Symptoms.—

1. *Hemorrhage*.—Whenever menstruation seems to return after the menopause, suspect cancer. This hemorrhage will increase later in the disease and will follow vaginal examination, coition, or straining at stool.

2. *Leukorrhea*.

3. *A reddish-brown, foul-smelling discharge*, the odor of which is characteristic. This discharge marks the period of ulceration.

4. *Pain*.—This symptom may or may not be present. When the cervix alone is involved there may be little or no pain. When the body of the uterus is attacked pain appears early, and is of a dull, gnawing character, felt most in the pelvis and back, radiating down to the lower extremities.

5. *Cachexia*.—Failure of health may not occur until the disease has progressed to a considerable extent; when the debility occurs it is well marked and characteristic. There may be obstinate constipation either from involvement of the rectum or from the great pain excited by the act of defecation. Uremia and occasional rises of temperature may occur late in the disease. Pruritus vulvæ may appear, caused by the irritating vaginal discharge.

From extension of the disease to neighboring organs various forms of fistulæ may be produced.

Physical Signs.—If cervical epithelioma is present the finger comes in contact with a glandular, friable growth, springing from one or both lips of the cervix.

Encephaloid.—In this form of carcinoma the cervix is somewhat swollen and moderately soft. The greatest enlargement is in the supravaginal portion, extending toward the parametra.

Scirrhus gives on examination a hard, nodular feel; the mucous membrane seems to be immovably fixed on the subjacent connective tissue (*Penrose*). Dilatation of the cervix is extremely hard to accomplish. Examination through a speculum will aid in distinguishing the growth. The color of the cervix will be livid or purple. Microscopic examination will confirm the diagnosis.

In *cancer of the body of the uterus* the cervix may be but slightly enlarged, while the body is increased in size. Examination of the interior will show the length of the cavity to be increased and its

walls covered with irregularities. Fragments should be removed with a curet for microscopic examination.

Differential Diagnosis.—

1. *Small Fibroid in the Cervix, or Sloughing Fibrous Polypus.*—Fibroids appear in younger women. No hemorrhage follows examination; no cachexia; the rim of the cervix will be found encircling a polypus, while the cervix itself is not diseased. Microscopic examination will confirm the diagnosis.

2. *Syphilitic Ulceration.*—The history of the patient must be taken into consideration. Condylomata are rare. Both specific ulcers and condylomata disappear under proper antisyphilitic treatment.

3. *Erosion of the Cervix with Ectropion.*—The pain and general symptoms are not those of malignant disease. The cervical lips can be brought together and the eroded surface will disappear.

4. *Hypertrophic Elongation of the Cervix with Induration.*—The cervix is capable of dilatation and the mucous membrane is movable on the tissues beneath. The general history of cancer is absent.

Malignant disease of the body may be mistaken for—

1. Retained placenta.
2. Sloughing fibroid.
3. Cystic degeneration of the chorion.

The history of the patient combined with microscopic examination will aid greatly in the diagnosis.

Prognosis.—Bad, and certainly fatal without operation. Cancer of the body is rather slower in its fatal action than where the cervix is attacked. Malignant disease predisposes to miscarriage and pregnancy hastens the progress of the disease. The fetal mortality is great.

Malignant Deciduoma.—This rather rare form of intra-uterine growth consists of a malignant degeneration of retained decidua debris. It is characterized by a marked tendency to the formation of metastatic deposits throughout the body. The disease terminates fatally in from five to six months after delivery. It occasionally follows cystic disease of the chorion.

The name of syncytial tumor is also given to the above. The treatment is hysterectomy.

SARCOMA OF THE UTERUS.

"A connective-tissue tumor of embryonal type, formally known as recurrent fibroids" (*Penrose*).

Pathologically it is divided into—

1. Circumscribed fibrous sarcoma.
2. Diffuse sarcoma of the mucous membrane.

It usually appears in the body of the uterus and is very rarely found in the cervix.

Cause.—Little is known as to the exciting cause. It usually appears between the fortieth and fiftieth year. Unmarried or sterile married women, as well as those who have borne children, may be affected.

Pathology.—*Circumscribed fibrous sarcoma* originates in the parenchyma of the uterus. They are classified by their location into subserous, interstitial, and submucous. *Macroscopically*, the tumors appear as firm, knotty growths in the uterine wall or may project into its cavity. They are not encapsulated. *Microscopically*, they consist of localized infiltrations of round cells.

Diffuse sarcoma of the mucous membrane originates from the connective tissue of the epithelium. *Macroscopically*, there is at first a general swelling of the mucous membrane, which later softens and crumbles. The tumor has a grayish-white color and soft, pulpy consistence, resembling brain-tissue. *Microscopically*, the mucous membrane is infiltrated with small round or spindle cells. Ulceration is not so deep in sarcoma as in carcinoma; the growth is slower and metastases are less likely to occur.

The hemorrhages of sarcoma are not due to ulceration of the blood-vessels, as in true cancer, but to hyperemia of the mucous membrane.

Symptoms.—

1. Hemorrhage, first appearing as menorrhagia or as irregular hemorrhages after the menopause.
2. Pain may or may not be present.
3. Watery discharge containing grayish-white shreds resembling pieces of brain-substance. The odor of the discharge is slight or may be absent altogether.
4. Cachexia.

5. Enlargement of the uterus.

Diagnosis.—Sarcoma may be mistaken for—

1. Hemorrhagic or villous endometritis.
2. Retained placenta.
3. Sloughing polypi.
4. Carcinoma of the body.

The diagnosis must be made from the symptoms and by removing fragments with scissors, knife, or curet, and examining them carefully with the microscope.

In all forms of cancer death is caused frequently by exhaustion, rarely by peritonitis, very frequently by *uremia* or by *septicemia* or *hemorrhage*.

Treatment of uterine cancer may be divided into—

Radical or *operative*, and the *palliative*. The former consists of *high amputation of the cervix* or *vaginal hysterectomy*. Amputation of the cervix is indicated only when the uterine neck is involved to a slight extent. Schroeder's supravaginal amputation is the operation generally chosen.

The operation is done as follows: The cervix is drawn down with a pair of vulsella forceps in the hands of an assistant. The anterior culdesac is incised around the cervix and the latter separated from the bladder nearly as far up as the peritoneum. The uterine arteries on each side are ligated as high up as possible by catgut sutures. The cervix is drawn forward and the posterior culdesac incised. The anterior and posterior lips of the cervix are now removed. The next step in the operation is to unite, by sutures, the anterior lip of the cervix to the anterior vaginal wall, and the posterior lip to the posterior vaginal wall. The lateral incisions are closed by suturing to the uterus above the line of amputation.

Vaginal Hysterectomy.—**Colpohysterectomy.**—The removal of the uterus by the vagina is indicated in all cases of cancer in which the disease is confined to the uterus. It should not be attempted when the broad ligaments are involved or when the pelvic or vaginal lymphatics show extension of the disease.

Adhesions non-cancerous in character or pregnancy are not contraindications to the operation. In determining the extent of the growth, examination under anesthesia may be necessary. The

vagina must be thoroughly disinfected for several days before the operation. If the cervix be covered with friable vegetations causing a fetid discharge, these must be removed with a curet about a week before the operation. After curetment the cervix should be treated with applications of chlorid of zinc 1 : 10, or the

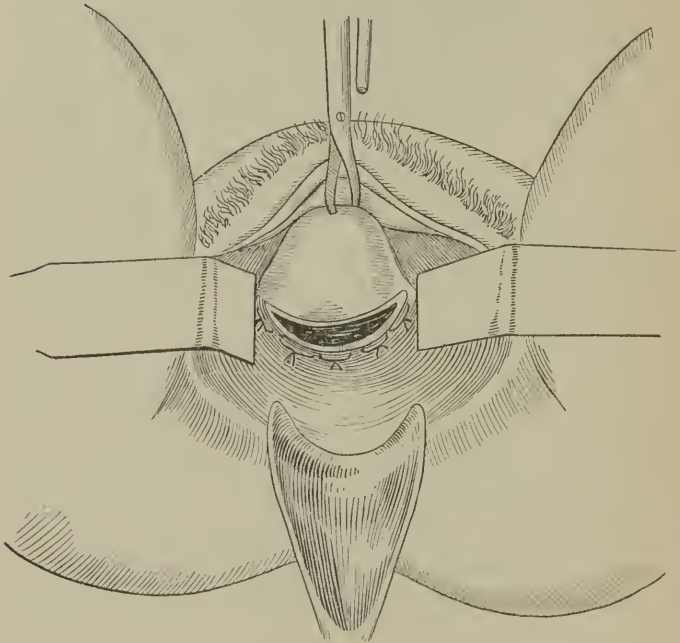


FIG. 120.—VAGINAL HYSTERECTOMY.—(*Martin.*)
Opening of the posterior culdesac and suture of the vagina.

actual cautery, followed by irrigations twice daily of bichlorid of mercury solutions 1 : 2000. The vagina should be tightly tamponed with gauze. A few hours before the operation the bowels should be opened by an enema, and the bladder emptied immediately before the operation begins. Kelly recommends that catheters be inserted into the ureters to protect them from injury during the operation.

1. The patient is etherized and placed in the dorsosacral position, the vaginal walls are retracted, and the perineum depressed by a Sims speculum. Some authorities recommend that at this point in the operation the cervix be drawn down by a vulsella and a continuous suture run through both lips of the cervix, so as to close it and thus prevent infection from this septic surface. The

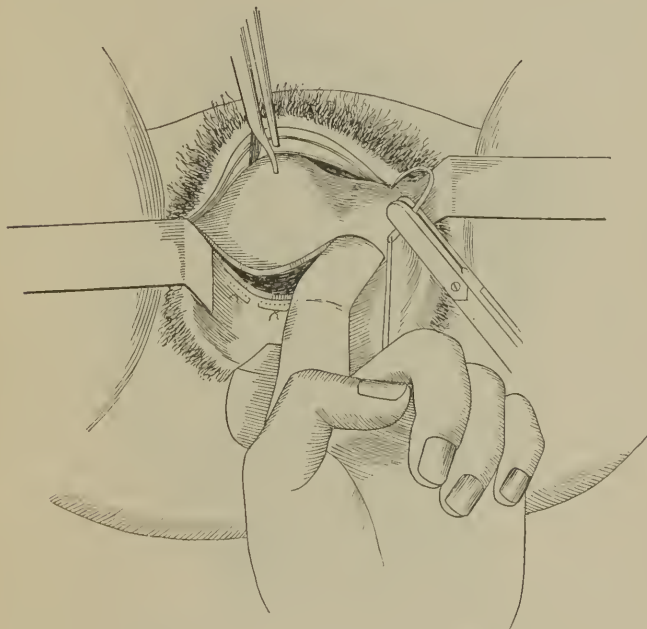


FIG. 121.—VAGINAL HYSTERECTOMY.—(Martin.)
Suture of the vaginal floor.

ends of these sutures may be left long and may be used to draw the uterus downward as the operation proceeds. When the vagina is so small as to render the operation difficult, the perineum may be split (perineotomy) and united by sutures immediately after the removal of the uterus.

2. *Opening Douglas' Culdesac.*—The posterior wall of the vagina

is stretched by continuing the traction on the cervix downward and forward. A transverse incision is then made with a knife, or the knife-blade of a Paquelin cautery, through the entire width of the culdesac, down and through the peritoneum. Some operators recommend that the peritoneal (posterior) layer of Douglas' pouch be now sutured to the posterior vaginal wall, so as to cover

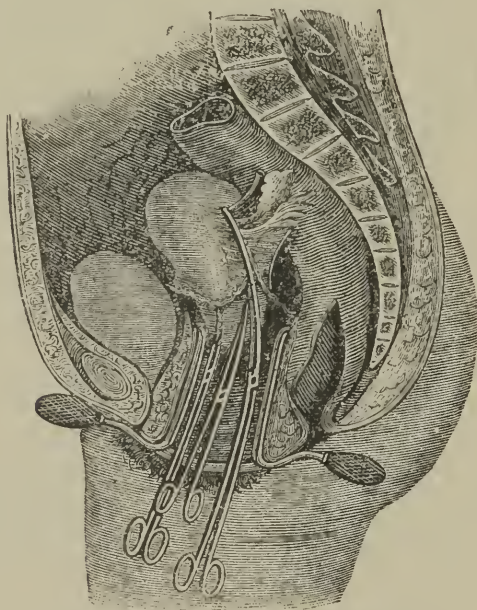


FIG. 122.—VAGINAL HYSTERECTOMY.—(*Pean*)
Forceps on the base of the broad ligament.

the exposed cellular tissue. A large gauze pad or sponge with a string or wire attached, carefully sterilized, should be inserted to prevent prolapse of the intestines.

3. *Ligation of the Uterine Artery. Hemostatic Suture of the Pelvic Floor.*—The operator's left index finger is passed through Douglas' culdesac, and the left broad ligament is pressed down

against the vaginal roof, while a large, curved needle, armed with strong silk and grasped in a needle-holder, is passed through the anterior part of the left lateral fornix so as to pierce the broad ligament above the uterine artery, and made to reappear in the vagina near the end of the posterior incision. The same procedure is repeated on the right side and the ligatures tied. The bases of the broad ligaments are now incised, by means of scissors, close to the uterus and as far up as the space controlled by the ligature extends.

4. *Opening the Vesico-uterine Pouch or Anterior Vaginal Fornix.*—The anterior culdesac is made tense by drawing the cervix backward, and an incision is made down to the muscular coat of the uterus at the point of junction of the anterior surface of the cervix with the vaginal mucous membrane, after which the bladder is separated from the uterus by means of blunt-pointed scissors, a scalpel-handle, or the fingers. Care must be taken to keep as near as possible to the cervix, as there is danger of wounding the ureters. The opening of the culdesac is very frequently done by one incision around the cervix with the knife or cautery.

5. *Retroversion of the Uterus for Ligation of the Superior Portions of the Broad Ligaments.*—The uterus is drawn down and retroverted by means of a pair of tenacula forceps or the fingers. The ligaments are ligated from below upward and carefully severed from the uterus. In ligating the oviducts Kelly recommends that where the uterine neck is diseased the ligature should be passed over the tube close to the uterus, but if the body is affected the tube should be ligated on the outer side of the ovary, which should be removed with the uterus. The incision is completed and the uterus removed. The gauze pad is now withdrawn and, after careful inspection and cleansing, the two flaps of peritoneum should be united in the middle by sutures, leaving two openings, one on each side, for drainage. A careful cleansing and disinfection of the wound should now be made.

The Clamp Method.—Hemorrhage from the broad ligaments may be prevented by clamps or broad-ligament forceps, one or more being applied to the broad ligament of each side. When used they are allowed to remain in position for from forty-eight to seventy-two hours after the operation. A recent method of preventing hemorrhage from the broad ligaments is described by

Newman, of Chicago, and others. The broad ligaments are grasped by a powerful screw-clamp, known as Tuffier's angiotribe, and crushed. Pressure for two or three minutes is said to be sufficient to prevent hemorrhage. The advantages claimed for this method are lessened danger of hemorrhage; especially secondarily, as there are no ligatures to slip, no infection from ligations, and no shock.

6. *Drainage and Dressings.*—After thorough disinfection the vagina is filled with strips of iodoform gauze, and a gauze tampon is introduced between the stumps of the two broad ligaments and allowed to project into the vagina. The vaginal wound is left open to favor drainage. The vagina is packed moderately with iodoform gauze to prevent prolapse of the intestines. Where clamps are used the dressing is the same, strips of iodoform gauze being loosely packed around them. The dressings must be changed according to the amount of discharge. If not soiled they should be allowed to remain for four days. The tampons are removed at the end of the first week, at which time the peritoneal wound will be firmly closed. The patient should be allowed to get up at the end of three weeks.

The after-treatment is the same as that following *celiotomy*.

Palliative Treatment. Indications.—When the cancerous infiltration has extended to the broad ligaments and pelvic lymphatics or where the vagina and neighboring organs are extensively involved.

For the offensive odor, antiseptic injections, such as carbolic solutions, solutions of potassium permanganate, solutions of one part bromin to three parts water, chloral hydrate ʒj-iiij to the pint of water, or thymol, should be used. For the hemorrhage, abstinence from sexual intercourse, injections of alum, tannin, vinegar, or tampons of cotton saturated with subsulphate of iron in solution, powder, or with glycerin. Ergot should be given internally. *The bowels* should be kept open. Tonics in the form of iron, strychnin, or arsenic should be given for the cachexia. Arsenic is supposed by some authorities to have a certain amount of action in controlling the disease. For the pain, opium in some form is indicated.

A palliative operation may be done by removing the granu-

lating masses with a sharp spoon-curet or knife, and applying fuming nitric acid, actual cautery, or chlorid of zinc, equal parts with water. Where the latter is used, excoriation of the vagina must be prevented by smearing it with one part bicarbonate of soda in three parts vaselin. When chlorid of zinc is applied on tampons, in the cervical or uterine canal, the lower part of the vagina should be packed with tampons soaked in a solution of bicarbonate of soda. Various remedies for the cure of cancer, such as the administration of cinnamon, methyl-blue, salicylic acid, or the hypodermic injection of the streptococcus of erysipelas or its toxin, have not met with generally good results. The latter treatment seems to have had a certain amount of success in a few cases.

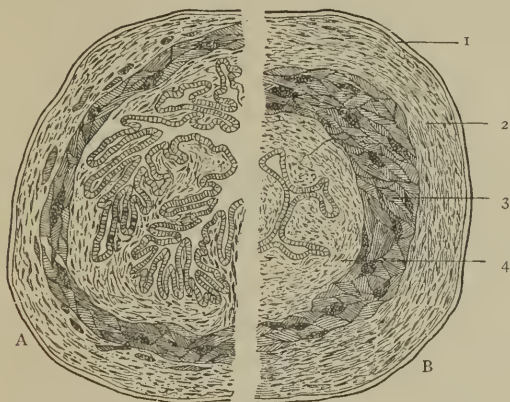


FIG. 123.—NORMAL FALLOPIAN TUBE.—(Wyder.)

- A. Enlarged section from the ampulla, showing the folding of the mucous membrane and thinness of the walls. B. Section from near the uterus, showing small size of the lumen and thickness of the walls. 1. Serous coat. 2. Connective tissue supporting the serous coat. 3. Muscular coat. 4. Connective tissue supporting the epithelium.

ANATOMY OF THE OVIDUCTS.

At an early period of intra-uterine life the ducts of Müller fuse at their inferior portions to form the vagina and uterus. Superiorly, they remain separate and constitute the oviducts or Fallopian

tubes. The oviducts are two in number and lie between two layers of the broad ligament, taking their origin from the superior angles of the uterus on each side, posterior to the insertion of the round ligaments. They are about four inches in length, the right tube being sometimes slightly longer than the left. Their direction is generally upward and backward, then downward. At the outer or ovarian extremity of each tube is situated the *fimbriated* extremity, or *infundibulum*; the expanded portion of the tube to which the fimbriæ are attached is called the *ampulla*, or pavilion. The tubo-ovarian ligament connects the tube with the ovary. The internal end at its point of entrance into the uterine cavity is the narrowest part of the tube, and is known as the *isthmus*. The upper part of the broad ligament which covers the oviduct is called the *mesosalpinx*. The blood-supply of the oviducts is the same as that of the ovaries.

DISEASES OF THE OVIDUCTS.

SALPINGITIS.

An inflammation of the mucous membrane of the tubes.

Salpingitis is divided into acute and chronic.

Pathologically it is divided into—

1. Simple catarrhal.
2. Salpingitis with occlusion of the ostium, but without distention.
3. Cystic distentions produced by occlusion of the uterine end of the tube, as pyosalpinx, hydrosalpinx, hematosalpinx.
4. Tubo-ovarian cysts (*Penrose*).

Pozzi gives a classification based on the clinical and anatomic features as follows :

- | | | |
|----------------------------|---|---|
| 1. Non-cystic salpingitis. | { | (a) Acute catarrhal.
(b) Acute purulent.
(c) Chronic parenchymatous.
(d) Pachysalpingitis. |
| 2. Cystic salpingitis. | { | (a) Hydrosalpinx.
(b) Pyosalpinx.
(c) Hematosalpinx. |

Causes.—

1. Usually secondary to a gonorrheal or puerperal septic endometritis or sepsis produced by the use of dirty instruments.
2. Taking cold at the menstrual periods.
3. Excessive exercise.
4. Tuberculosis, syphilis, or eruptive fevers.

Pathology.—The inflammation usually extends all along the mucous membrane of the tube to the fimbriæ and ovary. The abdominal opening is closed by adhesions, thus preventing escape of the contents of the tube into the abdominal cavity. Resolution is rare. At first there is a hyperemia of the mucous membrane more or less intense; later, swelling and softening of the tube, the

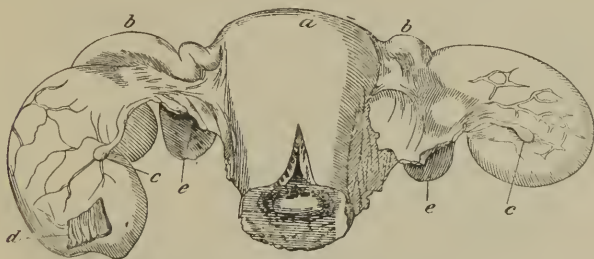


FIG. 124.—DOUBLE HYDROSALPINX.

a. Uterus. b, b. Fallopian tubes. c, c. Dilated portions of tubes. d. Remnant of adhesion. e, e. Ovaries.

tissues becoming friable; the fimbriæ share in the swelling. The mucous membrane is covered with a glutinous pus. Usually the abdominal opening now closes from adhesions. The uterine opening may remain patulous to permit the escape of the tubal contents. In some cases, however, the swelling of the mucous membrane is sufficient to close this ostium, and thus cause a retention cyst. When this cyst contains clear mucus, it is known as *hydrosalpinx*; when blood is retained, *hematosalpinx*; when purulent, *pyosalpinx*. The dilatation usually occurs in the outer two-thirds of the tube.

Extension of the inflammatory process beyond the mucous membrane into the muscular and areolar tissue may occur, pro-

ducing hyperplasia of these structures and hypertrophy of the tube (pachysalpingitis). Although the tube is very much enlarged, its caliber is frequently much decreased in size; it becomes lengthened and markedly tortuous. The tube and ovary are frequently bound down to Douglas' culdesac by a mass of adhesions.

A localized pelvic peritonitis usually follows, though general peritonitis is rare. As a rule, acute salpingitis only affects one tube, while in the chronic form both tubes are diseased.

Microscopically, an infiltration of inflammatory cells occurs; in mild cases this infiltration may be limited to the mucous membrane, or in more severe forms may involve the muscular



FIG. 125.—LARGE HEMATOSALPINX.

coat also. Destruction of the ciliated columnar epithelium takes place, either the cilia only or the entire masses of cells being destroyed.

Results of Salpingitis.—Rarely resolution occurs. The walls of the tubes become thin and extensive adhesions to the intestines, uterus, ovaries, or broad ligaments follow. The tube may rupture and general peritonitis ensue. Various forms of ovarian disease may result, such as chronic ovaritis, cystic ovaries, ovarian or tubo-ovarian abscess. Uterine displacements are common; ectopic pregnancy may occur in a partly occluded tube.

Symptoms.—During the *acute stage* increased temperature

and pulse; considerable dragging and burning pain in the region of the affected tube. This pain is increased in walking or standing. When there is pus in the tube, distinctly septic symptoms may appear. There is abdominal tenderness, the patient lying on the back with knees flexed. In the *chronic stage* the principal symptoms are: pain in the region of the affected tube, increased in walking, standing, going up or down stairs, straining at stool, heavy lifting, and coition. There is a history of repeated attacks of pelvic peritonitis, menorrhagia, and dysmenorrhea, the latter occurring two or three days *before* the flow begins. Sterility is common.

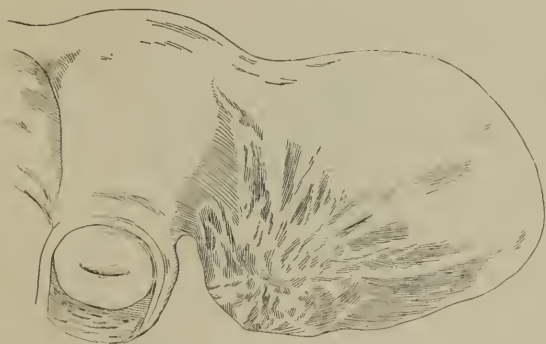


FIG. 126.—PYOSALPINX WITH OOPHORITIS AND UNIVERSAL ADHESIONS MASKING THE OVARY.—(Mundé.)

Physical Signs.—By bimanual examination a sausage-shaped tumor will be felt above one or both lateral fornices of the vagina. A sensation of fullness in Douglas' culdesac. The uterus is retrodisplaced and more or less fixed. When the tubes are not distended they may be felt extending half an inch or so outward from the cornua of the uterus.

Diagnosis.—

Between Pyo- and Hydrosalpinx.—Pyosalpinx has a history of a more acute attack with symptoms of pelvic peritonitis; the outlining of the tumor is more difficult; the adhesions are more numerous and dense.

Ovarian cysts or early tubal pregnancy may be distinguished by their history, slight inflammatory symptoms, and a scarcity of adhesions.

Hydro- or pyosalpinx must also be differentiated from simple retrodisplacements, uterine fibroids, cancer of the head of the colon, or appendicitis. The history of the case will aid in the diagnosis. The differentiation of appendicitis from right-sided tubal disease is sometimes very difficult.

Treatment.—

Prophylactic.—Aseptic cleanliness in the preparation of instruments and hands for examinations and operations. The same rules are applicable to the care of patients during confinement and the puerperal period. When the indications are not such as demand operation, the pain being but slight and a moderate menorrhagia existing, a palliative treatment may be used. The patient should rest in bed at the menstrual periods, and the bowels should be kept open. Salines should be administered to diminish pelvic congestion. Copious hot-water douches should be given in the vagina twice daily and the vault painted with Churchill's tincture of iodine. Gauze or cotton tampons saturated with boroglycerin or equal parts of iodine and glycerin are useful. Depletion of the pelvis may be aided by scarification of the cervix. Daily sitz-baths of water, at a temperature of 105° F. for half an hour, have been recommended. Ice poultices over the seat of inflammation give good results in the early stages.

Operative Treatment.—The indications for operative treatment depend upon the degree of the disease, the amount of pain suffered by the patient, and the failure of other forms of treatment to give relief. The operative treatment consists—

1. *In opening the abscess-sac through the vagina*, drawing off its contents, thoroughly irrigating with sterilized normal salt solution, and introducing a strip of iodoform gauze to act as a drain. Care must be taken to avoid injuring coils of intestine, the ureters, or a large blood-vessel.

2. *Laparotomy or Celiotomy.*—In some cases the diseased tube may be saved by carefully separating adhesions, drawing it up into the abdominal wound, stroking out the pus from the uterine end toward the fimbriæ, followed by washing with (1) sterilized

normal salt solution, (2) with bichlorid 1 : 5000. The tube is carefully dried and returned to the abdomen (Kelly). A syringe with a fine cannula attached should be used. Should this not be deemed proper, the diseased tube or portion of the tube should be amputated.

TUBERCULOSIS OF THE OVIDUCTS

Is usually secondary to tuberculosis in other organs of the body, particularly tubercular peritonitis.

Pathology.—The tubes thicken, inflame, and become filled with caseous material. The bacillus tuberculosis is present and



FIG. 127.—INTRAPERITONEAL HEMATOCELE.

may be recognized by microscopic examination. The diagnosis is sometimes difficult.

Treatment.—Immediate operation, whether tubercular peritonitis is present or not. Simply opening the abdomen, cleansing and draining the peritoneal cavity, may give good results.

PELVIC HEMATOCELE.

Definition.—"Under this and synonymous titles of retro-uterine hematocoele, peri-uterine hematoma, and blood-tumor of the pelvis, has been described an accumulation of blood in the pelvic

cavity, either above or below the peritoneum. The disease consists in the collection of a mass of blood in the pelvis, either above or below its roof" (*Mundé*).

"Pelvic hematocele is an encapsulated extravasation of blood into the true pelvis, located, as a rule, in Douglas' culdesac and displacing the uterus forward" (*Winckel*, Parvin's translation).

Causes.—

1. Rupture of an ectopic gestation sac.
2. Varicose veins of the broad ligaments.

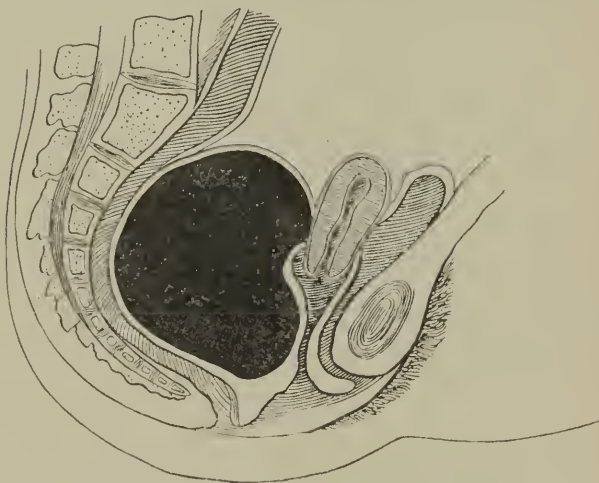


FIG. 128.—EXTRAPERITONEAL HEMATOCELE.

3. Aneurism.
4. Rupture of the uterus, tubes, or an ovary.
5. Certain constitutional conditions, as scorbutus, purpura, chlorosis, or hemorrhagic peritonitis.

Pathology.—The hemorrhage having taken place, the blood collects in the most dependent portion of the peritoneum (intra-peritoneal) or in the areolar tissue beneath (subperitoneal), where it gradually coagulates. Later, when the fluid is absorbed, a hard, fibrinous tumor remains.

Symptoms of Internal Hemorrhage.—

1. Sudden pallor, with coldness of the extremities and faintness, and subnormal temperature.
2. Pain in the pelvic region.
3. Rapid and small pulse.
4. Nausea or vomiting.
5. Uterine, vesical, or rectal tenesmus.
6. Sensation of weight and heaviness in the pelvis.
7. Tympanites.

If the patient survives the first twenty-four to thirty-six hours, the secondary or inflammatory stage begins. The symptoms of this stage are :

1. Chilliness.
2. Increased temperature.
3. Rapid pulse.
4. Tenderness over the abdomen with increased tympanites.
5. Hot, dry skin.
6. Constipation and, occasionally, suppression of urine.
7. Acute peritonitis.

Physical Signs.—By vaginal examination in recent cases a smooth, soft, and fluctuating tumor can be felt. This tumor is posterior to the uterus and pointing in Douglas's culdesac. The uterus is displaced forward and upward or occasionally to one side. The cervix may be above the symphysis. Very rarely the tumor occurs anterior to the uterus.

Abdominal palpation may or may not demonstrate the presence of a tumor, according to the extent of the hemorrhage and whether or not the effusion is under or in the peritoneum. In the majority of intraperitoneal hemorrhages, however, a distinct abdominal tumor can be felt.

Diagnosis.—Hematocele must be differentiated—

1. From *retrodisplacements*, particularly of the gravid uterus. In displacements the symptoms of internal hemorrhage are absent, and a sound passed into the uterus will quickly demonstrate the malposition. The coexistence of pregnancy can be determined by conjoined manipulation and the presence of the signs of the latter condition.

2. From *Ectopic Gestation*.—This condition develops slowly ;

many of the signs of pregnancy are present, and there is usually amenorrhea.

3. *Pelvic Cellulitis, Peritonitis, or Abscess.*—A tumor caused by an inflammatory exudate is usually found on one side of the uterus, and not behind it; is rather slower in growth; is at first hard and gradually softens. The uterus is not displaced forward to the same extent. Menorrhagia is not present.

4. *Fibroids and ovarian cysts* are slower in growth; do not show symptoms of sudden pain, internal hemorrhage, and shock.

Results of Internal Hemorrhage.—Death may result in a short time from loss of blood and shock. When the patient survives these the prognosis is fairly good.

Absorption may occur or septicemia may supervene, causing fatal peritonitis.

Treatment.—The indications for treatment are:

1. To check hemorrhage.
2. To produce reaction during the period of shock.
3. To relieve pain.

The patient must be put to bed and a full dose of opium administered; a bladder of cracked ice or cloths wrung out of iced water should be laid on the hypogastrium. Bottles filled with hot water or hot bricks wrapped in cloths must be placed around the feet and legs. Brandy and sulphuric ether should be given by mouth or hypodermic injection. When the heart is weak, strychnin in doses of $\frac{1}{30}$ to $\frac{1}{10}$ of a grain with digitalis should be given hypodermically. Hypodermoclysis of normal saline solution should be practised if the loss of blood is considerable.

Surgical Treatment.—Where the hemorrhage results from sudden rupture of an ectopic gestation sac or other tumor, the indications are to do abdominal section, remove the sac or tumor, and secure bleeding vessels.* In other cases operative inter-

* Bland Sutton gives the following rules for guidance in cases of ectopic pregnancy:

- I. When the placenta is above the fetus attempt removal.
- II. Sometimes the placenta becomes detached during operation and there is no choice. It *must* then be removed.
- III. When the placenta is below the fetus it should be left attached.

ference is not generally advised unless there is evidence that the hematocele is producing active harm by its presence.

ANATOMY OF THE OVARY.

The ovaries are two in number and lie on each side of the uterus in the posterior fold of the broad ligament, about an inch from the fundus.

They are ovoid in shape, somewhat flattened anteroposteriorly, and measure about one and three-tenths inches in length, three-fourths of an inch in width, and about one-half of an inch in thickness. Their individual weight is from 60 to 135 grains. The external covering of the ovary is continuous with the posterior layer of the broad ligament. The anterior border or hilum is flat and is attached to the broad ligament; it is at this point that the blood-vessels and nerves enter to supply the gland. This is also known as the bulb of the ovary. The posterior border is convex in shape and is free. The surface of the ovary is smooth, except for the prominences caused by the ripening follicles and the scars left after these have ruptured.

A vertical section of the ovary shows it to be composed of two distinct portions: the *cortical or superficial portion*, or *oophoron*, and the *internal medullary or bulbous portion*. The paroophoron is the portion in relation with the hilum. The ovisacs are found only in the cortical layer, and are about $\frac{1}{120}$ of an inch in diameter. Their number has been variously estimated at from 30,000 to 650,000. (For detailed description of the ovule the reader is referred to works on physiology, embryology, or obstetrics. After

IV. If the placenta be left and the sac closed and, later, suppuration occurs, the wound must be reopened and the placenta removed.

V. If the fetus die before operation is attempted, the placenta can be removed without risk of hemorrhage.

rupture has taken place the follicle is known as a corpus luteum, from its yellow color.

Microscopically, the cortex is continuous with the squamous epithelium of the peritoneum and is covered with a species of columnar epithelium consisting of nucleated cells (germ epithelium). The medullary portion does not contain ovules; it is composed of nerves, vessels, muscular and connective tissue.

Ligaments.—

1. The *tubo-ovarian*, extending from the fimbriated extremity of the tube to the outer end of the ovary.

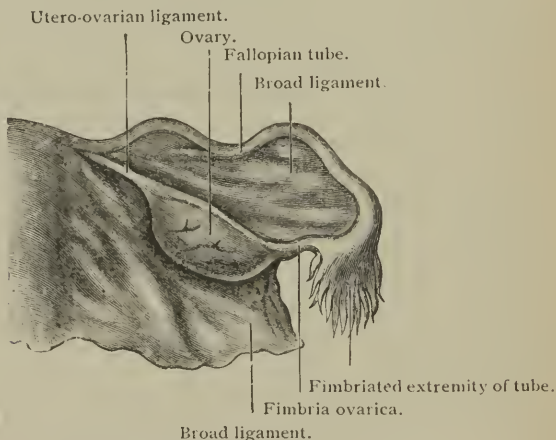


FIG. 129.—FALLOPIAN TUBE AND OVARY, SEEN FROM BEHIND.—(After Morris.)

2. *Ovarian*, extending from the cornua of the uterus below the uterine origin of the Fallopian tubes to the inner side of the ovary on either side. It is formed by a longitudinal fold of peritoneum and is about one and one-fourth inches long.

3. *Infundibulopelvic*, or posterior round ligament, extends from the outer extremity of the Fallopian tube to the lateral wall of the pelvis on each side. Is also formed from the broad ligament.

The *arterial supply* of the ovary is derived from the anastomosing arch of the uterine and ovarian arteries. The *venous supply*

is large and communicates with pampiniform plexus and ovarian veins.

The right ovarian vein empties into the inferior vena cava. The left enters the left renal vein.

The nerve-supply is derived from the ovarian plexus.

The **parovarium** consists of a series of small tubules lying between the layers of the mesosalpinx. These tubules radiate outward from the ovary and connect with a set of longitudinal tubules which run at right angles to them. Three sets of tubules are described :

1. An outer series, free at one extremity and known as *Kobelt's* tubes ;

2. An inner set, known as the *vertical* tubes ;

3. A larger canal running at right angles to the vertical tubules, known as Gärtner's duct. Occasionally, this duct may be traced downward into the vagina. The parovarium corresponds in the female to the epididymis, and vasa efferentia in the male. Gärtner's duct is homologous with the vas deferens in the male.

DISPLACEMENTS OF OVARIES AND TUBES.

The ovaries and tubes may be subject to hernia or prolapse. The former condition is rare ; occasionally, however, the ovary may pass through the inguinal canal and present itself as a true hernia. It is more common on the left side. Hernias through the crural canal, the umbilicus, and greater sacrosciatic foramen have been known to occur.

Symptoms.—The presence of a tumor, and a dull, sickening pain and nausea are the principal symptoms.

Treatment.—Reduction by taxis should be carefully attempted, and after replacement the patient should wear a truss. If reduction can not be made and the symptoms are severe, the sac should be incised and the ovary either removed or replaced.

PROLAPSE OF THE OVARY.

This may be caused by pregnancy, malposition of the uterus, chronic metritis, tubal or pelvic inflammation, etc.

When the uterus is retroverted, the ovary usually lies in front of or beneath the latter.

Symptoms.—Severe pain during or after defecation, pain after coition, dysmenorrhea, dysuria, etc. By vaginal examination an exquisitely sensitive tumor the size of an almond or walnut will be found in Douglas's culdesac. This tumor is movable, can be pushed upward, and the pedicle can be felt by dragging on the mass.

Treatment.—Rest in bed. Coition should be prohibited and the bowels carefully regulated. The patient should be placed in the genupectoral position and the prolapsed ovaries replaced and retained by a Thomas and Mundé pessary or other form of this instrument having a thick posterior bar.

When manual replacement is unsuccessful, the abdomen may be opened and the ovaries replaced by restoring the infundibulopelvic ligament or stitching the pedicle of the ovary to a point on the anterior parietes corresponding to the exit of the round ligament.

CONGESTION OF THE OVARIES.

A congestion in excess of that which occurs at ovulation, menstruation, or during coition.

Causes.—A frequent cause is a too close confinement at work or school, with overstudy, in young girls. Other less frequent causes are: cardiac disease, continued fevers, extensive burns, phosphorus poisoning.

Symptoms.—Pain in the lateral pelvic regions for several days *before the beginning* of the menstrual flow. The pain usually lightens as menstruation is established and disappears toward its cessation. The decrease in pain is due to the relief of the engorged ovaries. Menstruation is increased and prolonged (menorrhagia). The patient becomes anemic and weak.

Treatment.—Rest in bed prior to or during the menstrual period. If the flow is excessive, the patient should be given, for a few days preceding the flow, a capsule containing ergotin, 2 grains, or 30 drops of the fluid extract of ergot three or four times a day. This should be continued until the flow ceases. Potassium bromid, 15 to 20 grains, or potassium chlorate, 5 grains, may be given twice daily during the menstrual intervals. Tonics, such as strychnin, quinin, arsenic, etc., are indicated. When overstudy is the cause,

the patient should be taken from school and an outdoor life, preferably in the country, encouraged. The bowels should be regulated, and a generous diet of plain, wholesome food allowed. Candies and pastries must be excluded. A morning sponge bath followed by friction with coarse towel will be found useful.

OOPHORITIS.

Definition.—An inflammation of the tissues composing the stroma of the ovary.

Varieties.—Various divisions, such as parenchymatous, follicular, interstitial, hyperplastic, atrophic, blennorrhagic, or cystic, have been described. Clinically, inflammation of the ovaries may be divided into—

1. Acute oophoritis.
2. Chronic oophoritis.

ACUTE OOPHORITIS.

Causes.—

1. Sepsis following abortion or parturition.
2. Gonorrhea.
3. Endometritis.
4. Salpingitis.
5. Disturbances of menstruation.
6. Exanthemata.
7. Arsenic or phosphorus poisoning.
8. Tuberculosis.

Pathology.—The inflammatory process may be divided into four stages:

1. Congestion with increased weight, the organ becoming rounder.

2. Great and continued increase in size, combined with softening and an infiltration of the organ with yellow- or violet-colored serum, and slight effusion of blood.

3. Suppuration, either a general infiltration or local collections of pus.

4. A gray softening and disorganization.

In perioophoritis, the capsule of the ovary usually becomes

thickened and the whole organ bound down by perimetric adhesions.

Termination.—Acute inflammation of the ovary may terminate in resolution or may progress to the formation and rupture of an abscess, followed by rapidly fatal peritonitis ; or, if this does not occur, the disease may become chronic.

Symptoms.—Acute, severe lancinating pain over the inguinal region in which the affected ovary lies ; this pain may radiate to the back and down the thighs. There is extreme tenderness on pressure. Elevations of temperature occur associated with frequent chills and rapid pulse. The functions of micturition and defecation may be disturbed.

Treatment.—Absolute rest in bed. An ice-bag should be applied over the affected ovary, or hot fomentations, if the latter can be better borne. Leeches may be applied to the perineum. Opium should be given by mouth or rectum, or morphia used hypodermatically. Tincture of aconite in doses of one or two drops every hour may be given. In the beginning, free purgation by the use of salines is of great service. Where ovarian abscess forms, the sac should be evacuated after celiotomy has been done. In some cases the evacuation can be made through the vagina.

CHRONIC OOPHORITIS.

Causes.—

1. Continuance of the acute form.
2. Excessive or violent sexual intercourse.
3. Masturbation.
4. Suppressed menstruation.
5. Operations upon the cervix.

Pathology.—

1. The ovarian capsule thickens.
2. Extensive peritoneal adhesions form, due to the effusion and organization of lymph.
3. Small cysts (cystic ovary) form throughout the ovary, caused by the enlargement and retention of the contents of the follicles. These cysts vary from the size of a pin's head to that of a pea.

Symptoms.—A constant dragging pain, increased before menstruation, particularly on motion, riding, or making a misstep.

The pain is greatest over the affected ovary, but radiates to the lumbar region, along the spine, down the thighs, and frequently in one or both mammary glands. Headache is an almost constant symptom. Painful micturition, defecation, and sexual intercourse usually appear also as symptoms. The menstruation is increased, amounting to menorrhagia. Hysteria or hysteroepilepsy is not uncommon. When both ovaries are diseased sterility occurs.

Physical Signs.—Examination will frequently show the uterus displaced anteriorly, laterally, or posteriorly. A degree of endometritis may be present. A soft, round, very sensitive tumor, the size of a walnut, will be found in Douglas's culdesac. Rectal examination will often aid greatly in the diagnosis. When the degree of sensitiveness is very great it may be necessary to administer an anesthetic before an examination can be made.

Diagnosis.—Chronic inflammation of the ovary with adhesions may be confounded with: (*a*) fecal masses in the rectum; (*b*) a fibroid attached to the side of the uterus; (*c*) salpingitis; (*d*) exudation into the folds of the broad ligament.

(A)

FECAL MASSES IN THE RECTUM.

1. Is elongated, following the course of the rectum.
2. Is doughy and can be easily indented by pressure.
3. Not sensitive.
4. Disappears after free use of cathartics.
5. No displacement of the uterus.

INFLAMED OVARY.

1. Is round, the size of an almond or walnut.
2. Is hard and can not be indented by pressure.
3. Very sensitive.
4. Does not disappear after purgation.
5. Uterus frequently displaced.

(B)

FIBROID SPRINGING FROM THE LATERAL WALL OF THE UTERUS.

1. Hemorrhage more constant, both menorrhagia and metrorrhagia.
2. Not sensitive to pressure.
3. Is harder on pressure.
4. Is intimately connected with the uterus and moves with it.

INFLAMED OVARY.

1. Menorrhagia only is present.
2. Very sensitive to pressure.
3. Is softer.
4. Not connected with the uterus except by adhesions.

(C)

SALPINGITIS.

INFLAMED OVARY.

- | | |
|--|---|
| 1. Tumor is sausage-shaped and is more at the side of the uterus.
2. Tumor is fluctuating.
3. The ovary on palpation may be found separate from the enlarged tube. | 1. Tumor is globular and generally in Douglas's culdesac.
2. No fluctuation.
3. Can not be felt on palpation. |
|--|---|

(D)

EXUDATION IN THE BROAD LIGAMENT.

INFLAMED OVARY.

- | | |
|--|--|
| 1. Uterus is fixed.
2. Sensitiveness less.
3. Exudation is less circumscribed, giving the feel as if the uterus was set in glue.
4. Is closer to vaginal vault. | 1. Uterus less fixed.
2. Acute pain on pressure.
3. Enlarged ovary can be more plainly outlined.
4. Is not so close to vaginal vault. |
|--|--|

Treatment.—Rest in bed, particularly during the menstrual periods. Abstinence from sexual intercourse. Copious vaginal injections of hot water twice daily are of service in reducing congestion, and to further aid in this object, the cervix and vaginal vault should be painted with iodine twice or thrice a week.

Leeches may be applied to the abdomen over the affected ovary or to the cervix, if pain is great. Blisters over the ovaries or mercurial inunctions frequently do good. Internally, the administration of iodide or chlorate of potassium or the bromides are of service. These may be given alone or in combination with bitter tonics. The "American Text-book of Gynecology" recommends the following:

R. Auri et sodii chloridi, gr. $\frac{1}{10}$
 Extractum cannabis indicæ, gr. ss.

Given in a capsule, one to be taken three times a day.

Ichthyol, either by inunction over the abdomen or by the mouth or vaginal suppository, is highly recommended.

Vaginal massage should be practised to overcome fixation of the ovaries. The tincture of pulsatilla may be given in ten-drop doses for the pain. It is best administered three or four times

daily for some days before the pain begins, and continued until the menstrual flow is well established. Mild currents of galvanism not exceeding 20 M. A. are recommended, the positive electrode with the metal ball covered with wet absorbent cotton being introduced into the vagina and the negative electrode placed on the abdomen over the affected ovary. The application should not exceed fifteen or twenty minutes three or four times a week. When all other means of relief have failed, the abscess should be opened and washed out either after abdominal incision or by incision through the vagina; or, if this is not advisable, the ovary should be removed. The more conservative treatment is at present considered the better course.

TUMORS OF THE OVARY.

Tumors of the ovary may be classified as follows:

- | | | | | | | | |
|--|---|--|---|-----------------|--|--|--|
| (A) Solid tumors. | { <ol style="list-style-type: none"> 1. Fibromata. 2. Myomata. 3. Carcinomata. 4. Sarcomata. | | | | | | |
| (B) Cystic tumors. | <table border="0"> <tr> <td data-bbox="398 848 481 910" style="vertical-align: middle;">Small
cysts.</td> <td data-bbox="502 793 946 947" style="vertical-align: middle;"> { <ol style="list-style-type: none"> 1. Follicular. 2. Cysts of corpus luteum. 3. Tubo-ovarian cysts. 4. Small residual cysts of the hydatid of Morgagni or parovarium. </td> </tr> <tr> <td data-bbox="398 1070 481 1131" style="vertical-align: middle;">Large
cysts.</td> <td data-bbox="502 947 946 1241" style="vertical-align: middle;"> <table border="0"> <tr> <td data-bbox="523 947 761 1054" style="vertical-align: middle;"> { <ol style="list-style-type: none"> 1. Glandular pro-
liferous or ovarian
adenomata. 2. Papillary proliferous. 3. Parovarian. 4. Simple or mixed dermoid. </td> <td data-bbox="771 947 946 1193" style="vertical-align: middle;"> { <ol style="list-style-type: none"> Multilocular. Unilocular. Areolar. Hyaline. Papillary. Dermoid. </td> </tr> </table> </td> </tr> </table> | Small
cysts. | { <ol style="list-style-type: none"> 1. Follicular. 2. Cysts of corpus luteum. 3. Tubo-ovarian cysts. 4. Small residual cysts of the hydatid of Morgagni or parovarium. | Large
cysts. | <table border="0"> <tr> <td data-bbox="523 947 761 1054" style="vertical-align: middle;"> { <ol style="list-style-type: none"> 1. Glandular pro-
liferous or ovarian
adenomata. 2. Papillary proliferous. 3. Parovarian. 4. Simple or mixed dermoid. </td> <td data-bbox="771 947 946 1193" style="vertical-align: middle;"> { <ol style="list-style-type: none"> Multilocular. Unilocular. Areolar. Hyaline. Papillary. Dermoid. </td> </tr> </table> | { <ol style="list-style-type: none"> 1. Glandular pro-
liferous or ovarian
adenomata. 2. Papillary proliferous. 3. Parovarian. 4. Simple or mixed dermoid. | { <ol style="list-style-type: none"> Multilocular. Unilocular. Areolar. Hyaline. Papillary. Dermoid. |
| Small
cysts. | { <ol style="list-style-type: none"> 1. Follicular. 2. Cysts of corpus luteum. 3. Tubo-ovarian cysts. 4. Small residual cysts of the hydatid of Morgagni or parovarium. | | | | | | |
| Large
cysts. | <table border="0"> <tr> <td data-bbox="523 947 761 1054" style="vertical-align: middle;"> { <ol style="list-style-type: none"> 1. Glandular pro-
liferous or ovarian
adenomata. 2. Papillary proliferous. 3. Parovarian. 4. Simple or mixed dermoid. </td> <td data-bbox="771 947 946 1193" style="vertical-align: middle;"> { <ol style="list-style-type: none"> Multilocular. Unilocular. Areolar. Hyaline. Papillary. Dermoid. </td> </tr> </table> | { <ol style="list-style-type: none"> 1. Glandular pro-
liferous or ovarian
adenomata. 2. Papillary proliferous. 3. Parovarian. 4. Simple or mixed dermoid. | { <ol style="list-style-type: none"> Multilocular. Unilocular. Areolar. Hyaline. Papillary. Dermoid. | | | | |
| { <ol style="list-style-type: none"> 1. Glandular pro-
liferous or ovarian
adenomata. 2. Papillary proliferous. 3. Parovarian. 4. Simple or mixed dermoid. | { <ol style="list-style-type: none"> Multilocular. Unilocular. Areolar. Hyaline. Papillary. Dermoid. | | | | | | |

(A) SOLID TUMORS OF THE OVARY.

These comprise only about five per cent. of operative cases of neoplasms of that organ.

1. FIBROMATA.

Pathology.—Fibrous tumors of the ovary consist rather in a fibroid degeneration of the whole gland than in a circumscribed tumor. The ovary undergoes uniform hypertrophy; its shape and relations are not altered. They may occur in a corpus luteum which has undergone fibroid degeneration. When in the latter situation, they vary from the size of a split pea to that of a hen's egg.

Ovarian fibromata may undergo calcification or myxomatous or sarcomatous degeneration.

The **symptoms** are practically the same as those of myomata.

2. MYOMATA.

These are composed of unstriped muscular fiber; occasionally traces of fibrous tissue may also be found. Both fibromata and myomata are rare, although the latter is rather more common than the former.

Symptoms.—Examination will show a hard oval tumor on either side or posterior to the uterus, but not attached directly to it. Pain is not a prominent symptom. Ascites is generally present, and may be of considerable amount. Where malignant degeneration occurs there appears:

1. Degeneration in health.
2. Lancinating pain in the region of the diseased ovary.
3. Ascites and edema of the feet and legs. As a cause of the latter symptom, the absence of cardiac, hepatic, and renal disease must be established.

3. CARCINOMATA.

Primary cancer of the ovary is rare. It is usually secondary to a cancerous condition in other organs (the uterus or breast) or to ovarian adenoma. The scirrhus or medullary forms are those most frequently found. The disease may originate in a Graafian follicle, a corpus luteum, or in the ovarian stroma. Both ovaries are affected in about fifty per cent. of the total number of cases.

4. SARCOMATA.

Rare. May appear as the round-celled or spindle-celled sarcoma, the latter being the more frequent. When present *both*

ovaries are generally involved. It may be confounded with fibroid tumors of the ovary, but in the latter only one ovary is enlarged. Sarcomata of the ovary are rapid in growth. They are usually of medium size, but may grow to be very large.

Treatment of Solid Tumors of the Ovary.—In ovarian fibroma and myoma it is frequently possible to incise the tumor and remove it, leaving the remainder of the ovary. When the tumor is malignant the whole ovary should be removed as soon as the diagnosis is made.

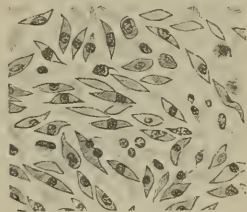


FIG. 130.—SPINDLE-CELLED SARCOMA OF THE OVARY.

(B) CYSTIC TUMORS OF THE OVARY.

I. SMALL CYSTS.

1. FOLLICULAR CYSTS.

These are formed from distended and unruptured Graafian follicles. They contain a serous fluid with a specific gravity of 1005 and upward. They vary from the size of a split pea to that of a man's fist.

2. CYSTS OF THE CORPUS LUTEUM

May vary in size from that of a walnut to an apple. The tissue of the true corpus luteum will be found by examination with the microscope.

3. TUBO-OVARIAN CYSTS

May be produced by the rupture of a small cyst or dilated follicle into the Fallopian tube, when the opening of the latter is bound to the ovary by adhesions, thus forming one cyst. When the Fallopian tube remains permeable, and the fluid contents of the cyst are discharged through the uterus, the condition is known as *profluent ovarian hydrops*.

4. CYST OF THE HYDATID OF MORGAGNI

Is a small cystic body varying from the size of a pea to that of a

cherry. It is attached to the fimbriated extremity of the Fallopian tube by a thin pedicle. It marks the remains of the canal of Müller.

5. CYSTS OF THE PAROVARIIUM OR ORGAN OF ROSENMÜLLER.

These may originate either in the vertical or horizontal tubes of the parovarium and may later develop into papillary cysts or those having fluid contents.



FIG. 131.—OVARIAN TUMOR WEIGHING 140 POUNDS.

Parovarian cysts may be (a) *pedunculated*, taking their origin from the tubules of Kobelt; these cysts usually remain small.

(b) *Sessile*, arising and remaining between the layers of the mesosalpinx. The second variety may grow to a large size. Cysts of the parovarium contain a clear fluid of alkaline reaction and a specific gravity of not over 1010.

II. LARGE CYSTS.

I. GLANDULAR AND PAPILLARY PROLIFEROUS CYSTS.

"The term 'proliferous,' as applied to cysts, refers to those which are highly organized and abundantly supplied with blood-vessels."

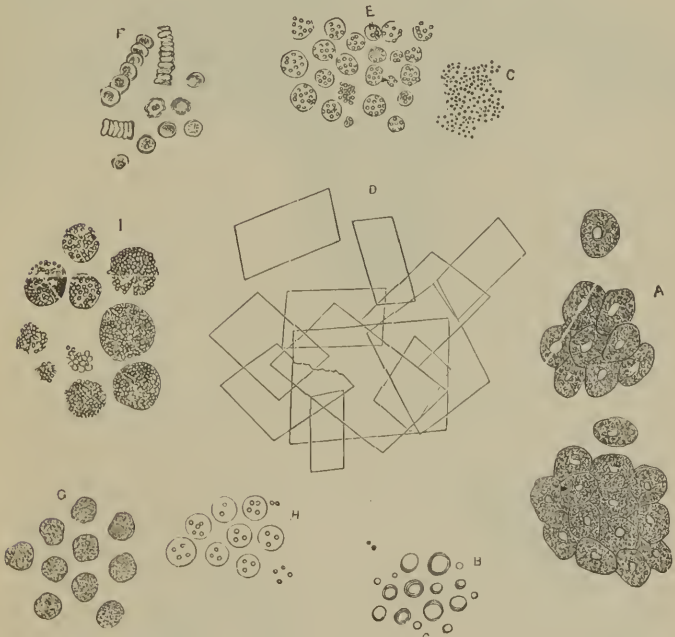


FIG. 132.—MICROSCOPIC EXAMINATION OF FLUID FROM OVARIAN TUMORS.

A. Epithelial cells. B. Oil-globules. C. Fine granular matter. D. Crystals of cholesterol. E. Granular cell. F. Blood-corpuscles. G, H. Pus-cells. I. Inflammatory globules of Gluge.

"The term 'proliferous' cysts is also applied to them and indicates their faculty of budding and generating new cysts from or within the original growth" ("American Text-book of Gynecology").

(a) *Multilocular cysts* derive their name from the fact that they

are composed of a large number of small cysts of about equal size inclosed in one cyst-wall. As these cysts grow to a large size,



FIG. 133.—PAPILLARY CYSTOMA OF RIGHT OVARY.

c. Cystoma. *d.* Its inner surface, showing papillary proliferation.

the walls of the inclosed smaller ones may undergo degeneration and thus one large cyst-cavity is formed. These are known as—



FIG. 134.—DOUBLE DERMOID CYSTS REMOVED DURING PREGNANCY.—(*Mundé.*)

(*b*) *Unilocular Cysts.*—It is supposed by many authorities that all *unilocular* cysts are thus formed from the *multilocular*.

The capsule or cyst-wall is composed of three layers. The *outer* layer is frequently lobulated and is made up of dense fibrous tissue. Columnar epithelium, differing from the pavement epithelium of the peritoneum, covers it externally. The middle layer is composed of connective tissue in which the blood-supply of the cyst is distributed. The internal layer is of fibrous tissue lined by low cylindric cells. Depressions resembling acinous glands are frequently found in sections. The lining membrane may be studded with growths formed from proliferated stroma and covered with a single layer of endothelium. May simulate *carcinoma*, *myoma*, or *fibrosarcoma*. These cysts vary greatly in size,—they may be as large as an egg or may weigh upward of one hundred pounds.

Much variation is found in the contents of ovarian cysts; indeed, they may be very unlike in different cysts in the same tumor. The color may be yellow, greenish, or dark brown, and the consistency viscid, gelatinous, or thin. As a rule, the fluid is thicker in the smaller cysts. The specific gravity of the fluid is always *above* 1010.

The cystic fluid contains various albuminous substances, decomposed blood, and granular cells and oil-globules. Cholesterin crystals and rice-shaped bodies are occasionally found.

The pedicle may be composed of the entire broad ligament or folds of the peritoneum, either alone or with an elongated and hypertrophied Fallopian tube and ovarian ligament.

2. PAPILLARY CYSTS.

These originate from the paroophoron in the broad ligament and occasionally in the parovarium. They burrow beneath the layers of the mesosalpinx, and when they attain a large size separate the layers of the broad ligament. They are usually bilateral, do not grow so rapidly nor attain so large a size as multilocular cysts, and produce no effect on the shape of the ovary unless very large. They are filled with a clear fluid and large numbers of warty growths, the latter forming masses which frequently distend the cyst-wall until rupture occurs, when the contents of the cyst are poured out over the peritoneum, infecting the omentum and any or all of the abdominal viscera.

Symptoms of pressure and ascites usually appear early.

3. DERMOID CYSTS.

The origin of the dermoids is obscure. According to the theory of impaction, certain portions of the blastodermic structure of the embryo become, during intra-uterine life, impacted by pressure within certain tissues and, later, develop. These cysts occur at all periods of life and contain large and numerous sebaceous or sweat-glands, hair, bone, unstriped muscular fiber, and a substance resembling brain-matter. Hair is very commonly found and may attain to a considerable length. As a rule, it is not the same color as that on the external parts. A putty-like material usually fills these cysts and is composed of a mixture of epithelial debris, oil, cholesterin, and sebaceous matter. Structures resembling mammaræ may also occasionally be found. Nervous tissue has never been demonstrated. Dermoid cysts may rupture, causing infection, with general peritonitis; or by their mechanical irritation they may cause suppuration and abscess.

Sequelæ.—

1. *Ovarian* cysts may undergo calcification, fatty degeneration, or atheromatous changes.

2. *Rupture* of the cyst may occur suddenly (acute rupture), or in a form of slow leakage of the contents of the cyst.

The *predisposing causes* of rupture are : thinning of the cyst-wall from distention or fatty degeneration ; the *immediate cause* may be coughing, labor-pains, blows, falls, or jars. Except in cases of dermoid or papillary cysts, peritonitis is not apt to occur.

3. *Torsion of the Pedicle*.—Twisting of the pedicle of ovarian cysts may occur suddenly (acute torsion) or slowly (chronic torsion). It occurs in about ten per cent. of ovarian and parovarian tumors.

Various causes, such as distention and evacuation of the bladder, passage of feces, blows, falls, pregnancy, etc., have been ascribed.

The effects are : hemorrhage into the cyst, thrombosis or passive congestion, occasionally necrosis, inflammation of the cyst-wall, with the formation of adhesions between the tumor and neighboring organs. The tumor may derive nourishment through these adhesions after the circulation through the pedicle is cut off. This is known as *transplantation of the cyst*.

4. *Inflammation and suppuration*, caused by infection from the Fallopian tube, intestinal tract, the urinary bladder, or by the admission of air in tapping, may occur. The cyst may rupture into the rectum, bladder, vagina, into the peritoneal cavity, or through the abdominal wall. When rupture into the bladder occurs cystitis usually follows, or in cases of a dermoid cyst the pieces of bone, etc., may form a nucleus for a vesical calculus.

5. *Hemorrhage* into the cavity of the cyst may occur spontaneously from torsion of the pedicle, tapping, etc. The hemorrhage may be profuse enough to cause danger to life.

6. *Renal degeneration* may occur from continual pressure on the ureters by the tumor, producing hydronephrosis and, later, chronic disease of the kidneys.

7. *Diseases of the heart, liver, and lungs.*

Causes.—The immediate cause of ovarian cysts is very obscure; oophoritis, sudden arrest of menstruation, excessive coition, blows, and injuries have been given.

As predisposing causes, chlorosis, scrofulous diathesis, disorders of menstruation, and general depreciation in health have been named. The tumors may be found at any age from fetal life to advanced old age, but are most common during the period of sexual activity—say, between the twentieth and fortieth years. They are most frequent in virginal or sterile women.

Symptoms.—*None pathognomonic.* A rapidly growing, non-sensitive tumor on either side should cause suspicion of ovarian growth. Later, symptoms of weight in the pelvis, pain on defecation, vesical tenesmus, and constipation appear. Dysmenorrhea or profuse menorrhagia are not uncommon; the latter symptom occurs particularly in broad-ligament tumors. As the size of the tumor increases, pressure symptoms appear; there will be edema of lower extremities and labia, ascites, and extreme emaciation, the features assuming the peculiarly pinched expression known as *facies ovariana*.

Pigmentation of the linea alba, mammary areolæ, and pain in the breasts may present themselves and simulate pregnancy. Violent attacks of abdominal pain, due probably to localized peritonitis, and occasional rises of temperature mark the later stages.

From pressure on the diaphragm and digestive organs, symptoms of interference with respiration and nutrition appear. The urine may contain albumin.

Inflammation and suppuration of the cyst are marked either by symptoms of acute peritoneal inflammation or chronic septicemia.

Where acute torsion has occurred, violent, sudden pain in the abdomen, vomiting, and collapse may occur.

Rupture of the cyst may be followed by no other symptoms than free diuresis, the abdomen at the same time becoming flattened. Most common in unilocular cysts. In papillary and dermoid cysts rupture is apt to be followed by peritonitis or general infection by the papillary growths.

Physical Signs.—

Inspection.—Enlargement of the abdomen occurs, the swelling being greatest in the iliac region over the tumor. A brownish discoloration of the skin and enlargement of the superficial veins may be present.

Palpation.—The tumor gives a feeling of hardness and resistance, but causes little pain. In multilocular cysts the irregular nodules may be felt through the abdominal walls. Unilocular cysts are generally smooth; fluctuation may be produced by placing the hand on one side of the abdomen and tapping the cyst lightly on the opposite side. In multilocular cysts the fluctuation wave is much shorter, and can only be felt by placing the hand on different parts of the abdomen. The distinctness of the wave will depend on the contents of the cyst, being more distinct when the tumor contains thin fluid, and less clear when mucus or colloid material is present. Efforts should be made to elicit the fluctuation wave from either side of the abdomen separately.

Percussion.—A clear or tympanitic percussion note is present over the loins, with dullness over the entire area of the tumor; this note is not changed on altering the position of the patient.

Bimanual Examination.—A tense, fluctuating tumor can be outlined between the two hands. This tumor is not connected with the uterus, which is movable and generally displaced.

Diagnosis.—

Small ovarian cysts lying in the pelvis may be confounded with—

1. Extra-uterine pregnancy.
2. Distended Fallopian tube.
3. Inflammatory exudation into the broad ligament.
4. Peritonitic exudation.

Large cysts occupying the greater part of the abdominal cavity may be mistaken for—

1. Ascites.
2. Pregnancy.
3. Fibroid tumors of the uterus.
4. Fibrocysts of the uterus.
5. Fat in the abdominal wall.
6. Hematometra.
7. Phantom tumors.

EXTRA-UTERINE (TUBAL) PREGNANCY.

1. Rapid and regular growth.
2. Amenorrhea, followed by menorrhagia, with discharge of pieces of decidua.
3. General symptoms of pregnancy present, changes in color of vagina, etc.
4. Enlargement of the uterus.
5. Attacks of pain increasing in severity, finally culminating in a very severe attack, followed by shock and symptoms of internal hemorrhage.

SMALL OVARIAN CYST.

1. Slower growth.
2. Menstruation not altered except occasionally in broad-ligament cysts.
3. Symptoms of pregnancy absent.
4. No enlargement of the uterus.
5. In small cysts, no attacks of pain except from pressure.

DISTENDED FALLOPIAN TUBE.

1. The tumor is more elongated.
2. Is intimately connected with the uterus, which is more or less fixed.
3. Tumor is sensitive to pressure.
4. History of acute inflammation and considerable pain.

SMALL OVARIAN CYST.

1. Tumor is round.
2. Is not connected with the uterus except by the tube, which is not increased in size.
3. Tumor non-sensitive.
4. No history of acute inflammation and little, if any, pain.

INFLAMMATORY EXUDATION INTO THE BROAD LIGAMENT.

1. History of inflammation following miscarriage, parturition, or operation.

PERITONITIC EXUDATE.

1. The tumor is sensitive to pressure, is fixed, and is generally found in Douglas's culdesac.
2. The uterus is fixed and feels as if set in some hard substance.
3. History of acute inflammation.

SMALL OVARIAN CYST.

1. No such history.

SMALL OVARIAN CYST.

1. The tumor is not sensitive, is somewhat mobile, and in small cysts is lateral.
2. The uterus is freely movable.
3. No history of acute inflammation.

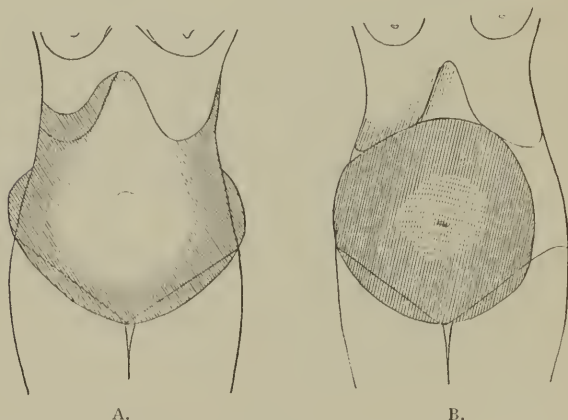


FIG. 135.—THE SHADED PORTION SHOWS THE AREA OF DULLNESS.
A. Ascites. B. Ovarian tumor.

ASCITES.

1. Swelling bilateral and more diffuse.
2. Percussion gives a tympanitic note *in front and above the tumor*, with *dullness* over the flanks.

LARGE OVARIAN CYST.

1. Swelling is central or unilateral and is circumscribed.
2. Percussion gives dullness over the tumor, and a clear or tympanitic note at the flanks and above. (Coronal resonance.)

- | | |
|---|--|
| 3. Percussion note varies by placing patient in different positions.
4. Abdomen flattens when patient lies down on her back. | 3. Little or no variation when position of patient is changed.
4. Abdomen always prominent. |
|---|--|

NOTE.—Ovarian cysts communicating with the intestine, or which have undergone suppuration, sometimes contain gas, and may give a tympanitic note on percussion. When the cyst-wall is very tense, a tympanitic note may be transmitted to the surrounding intestines. When such a condition is suspected, more information can be obtained by percussing lightly.

PREGNANCY.

1. The tumor is more symmetric and is central.
2. Subjective signs of pregnancy present.
3. The enlarged uterus can easily be outlined and composes the tumor.
4. Amenorrhœa is present.
5. Patient's general health good.
6. Hearing the fetal heart and outlining the fetal parts will settle the diagnosis.

LARGE OVARIAN CYST.

1. Tumor is rather more lateral.
2. Subjective signs of pregnancy absent.
3. The uterus is small, and the tumor is separate from it.
4. Menstruation is unchanged or may be increased.
5. General health of patient bad.
6. Fetal heart-sounds are absent, and no fetal parts can be outlined.

UTERINE FIBROID.

1. Tumor is hard, resisting, non-fluctuating, and of slower growth.
2. Tumor is growing from the uterus, and therefore moves with it.
3. Some enlargement of the uterus.
4. Menorrhagia generally present.
5. Uterine canal increased in length.

LARGE OVARIAN CYST.

1. Tumor is fluctuating, softer, and of more rapid growth than fibroid tumors.
2. Tumor not connected directly with the uterus.
3. Uterus not enlarged.
4. Menorrhagia not generally present.
5. No increased length of the uterine canal.

The differentiation between fibrocystic tumors of the uterus and ovarian cysts is very difficult and in many cases impossible. The discovery of other fibrous tumors of the uterus will aid in the diagnosis.

FAT IN THE ABDOMINAL WALL.

1. Usually occurs after the menopause.
2. Fat may be grasped between the two hands.
3. Deposits of fat in other parts of the body.
4. Does not fluctuate.
5. General health of patient good.

LARGE OVARIAN CYST.

1. Occurs during the period of sexual activity.
2. Can not be grasped in the same manner, but shows the outline of a circumscribed tumor.
3. Patient is increasingly emaciated.
4. Fluctuation may be obtained.
5. General health bad.

PHANTOM TUMOR—SPURIOUS PREGNANCY.

1. General resonance over the abdomen.
2. By distracting the patient's attention the abdomen may be depressed flat.
3. The tumor disappears under anesthesia.

LARGE OVARIAN CYST.

1. Dullness over tumor and presence of coronal resonance only.
2. Tumor does not disappear, and the abdomen can not be pressed flat.
3. Tumor does not disappear under anesthesia.

HEMATOMETRA.

1. Regular attacks of pain, increased during the time when menstruation ought to appear.
2. Menstruation very scant or absent.
3. Tumor central and formed by the distended uterus.
4. Tumor decreases in size, somewhat, between the menstrual epochs.
5. Atresia of the vagina or cervix present.

OVARIAN CYST.

1. No pain except from pressure.
2. Menstruation present.
3. Bulk of tumor lateral and separate from the uterus.
4. Tumor grows continually.
5. Absent.

Treatment of Ovarian Cysts.—Medical treatment is of no avail. The only methods of any use are tapping and removal of the cyst by celiotomy. Tapping is an operation of very limited usefulness, and is at best only palliative. Its dangers are: the causing of hemorrhage, perforation of an intestine, peritonitis; the opening of a papillary cyst, thus allowing the contents to escape and producing general infection of the peritoneal cavity, and localized points of inflammation, causing extensive adhesions. Tapping should never be practised when the presence of a dermoid cyst is suspected.

Indications for Tapping.—

1. When an ovarian cyst complicates pregnancy, puncture may be performed in order to allow delivery to take place.
2. When urgent pressure symptoms exist, that for any reason can not be relieved by operation.
3. When operation can not be performed. In the operation of puncture great care must be exercised as to antisepsis.

Ovariectomy.—Removal of an ovarian cyst by abdominal incision is indicated in all cases except where some coexisting pathologic condition will prove fatal to the patient, notwithstanding the extirpation of the tumor. The room in which the operation is to be done must be prepared according to the directions given in chapter on Antiseptics and the Preparation of the Room. The temperature should be about 75° F. The patient should have been in bed for at least forty-eight hours preceding the operation; she should be free from fever, bronchitis, or other inflammatory conditions. Careful examinations of the urine should have been made. The bowels should be kept open by laxatives or enemata, and the whole body bathed with soap and hot water every night. The antiseptic preparation of the abdomen has been described before. No solid food should be given for six or eight hours before the operation. Milk, on account of its tendency to produce flatulence, should be avoided. Immediately before operation the bladder should be emptied, a catheter being used, if necessary. Ether is generally used as an anesthetic; if, however, renal disease is present, or if bronchial irritation exists, chloroform is preferable.

The *assistants* should consist—

1. Of an anesthetizer.

2. A principal assistant, who should be a physician of some experience; his position is on the right side of the patient opposite the operator.

3. A third assistant is desirable; it should be his duty to prepare the needles, sutures, and operate the Paquelin cautery.

4. A nurse, whose duty is to keep careful count of the sponges used, and serve the operator and his assistants. The sponges should be kept in a basin of sterilized water on a table within easy reach of the first assistant. After use they should be thrown into a second basin of water, from which they are taken by the nurse, washed out, and placed in the first basin. The antiseptic toilet of the operator, assistants, and nurse has previously been described.

Sponges.—Generally marine sponges are preferable for abdominal operations. About half a dozen—two elephant-ear and four small ones—should be carefully prepared in the manner before described.

Instruments.—While the number and styles of instruments used in ovariectomy vary somewhat with the nature and difficulty of every operation, the following are those generally necessary: A scalpel, dissection forceps, curved scissors, six hemostats of small size, two pedicle forceps, an ovarian trocar, suture-carrier, needle-holder; six needles, curved and straight; retractors, and a Paquelin cautery. The instruments, after having been sterilized, should be placed in trays on a table on the right side of the operator, and within easy reach. The ligatures and sutures should be of silk, silk-worm gut, and catgut. There should also be on hand sulphate of strychnin in tablets of gr. $\frac{1}{30}$ to $\frac{1}{20}$, atropin in doses of gr. $\frac{1}{100}$ to $\frac{1}{80}$, solution of nitroglycerin or nitrite of amyl, Monsel's solution, brandy, aromatic spirits of ammonia, and a clean hypodermic syringe. A faradic battery may also be found useful.

The Operation.—An incision about three inches in length is made in the median line of the abdomen, about midway between the umbilicus and the symphysis pubis, and the tissues divided down to the peritoneum. But slight hemorrhage is generally encountered, and what small amount of bleeding there is can be easily controlled by pressure with a hot sponge. When the peritoneum is reached, a small portion of it should be held up and a very small incision made in it so as to avoid injuring the cyst or

coils of intestine lying beneath. If the peritoneum is adherent, a finger should be introduced into the opening in it and this enlarged with a pair of scissors. The omentum must not be mistaken for a layer of preperitoneal fat; in the former the vessels run vertically and in the latter transversely. As the cyst projects into the wound it presents a pearly, glistening appearance. Two or three fingers should now be passed around it to determine the presence or absence of adhesions; when these exist they can frequently be separated by pressing the adherent viscera away with a sponge after the cyst has been drawn up through the wound. If adhesions are very dense, they may be separated by scissors or a cautery. Adhesions between the tumor and omentum should be tied off with fine silk before separation.

Tapping the Cyst.—The cyst having been drawn into the incision, an opening is made in it at the upper angle of the abdominal wound by means of a trocar with rubber tube attached. The edges of the wound should be packed with sterilized gauze or sponges to prevent escape of the cyst-fluid into the abdominal cavity, the side of the abdomen being supported at the same time by an assistant. After evacuation of the cyst further adhesions are carefully separated and the sac drawn into the wound and examined.

Separation of the Cyst-sac.

—This may be accomplished by cauterization or ligation. If ligation is used the pedicle is transfixed with a double ligature passed by means of an aneurysm needle or a strong, curved needle in a holder; the ligature is then cut (making two threads) and each ligature tied separately.

The two ends of one thread are tied firmly on the outer side of the pedicle and the ends of the second thread tied on the inner side. In the Tait or Staffordshire suture the thread is passed, by means

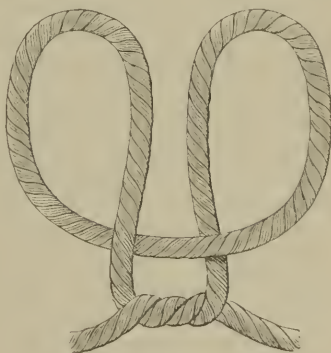


FIG. 136.—STAFFORDSHIRE KNOT.

of an aneurysm needle, through the center of the pedicle in a direction *from* the operator. The needle is then withdrawn. The loop is now brought forward over the tumor, one end of the suture being carried above and the other below it. The two ends are now tied in a double knot and passed around the pedicle in the groove formed by the loop and tied in a double knot on the other side.

If the pedicle is very broad, other ligatures may be introduced; in tying these the thread should occupy the groove formed by the first ligature. Great care must be exercised in leaving enough tissue in the stump to prevent the ligatures from slipping. For suture material, either silk or strong catgut may be used; the latter is, however, hard to completely sterilize and is the more apt to slip. The outer border of the distal side of the pedicle is now grasped with two pairs of strong forceps about half an inch from the ligature and the pedicle severed about an inch beyond the groove in which the ligatures lie. Cauterization of the pedicle is done by grasping it with a clamp having ivory plates on one side, the actual cautery being then passed over the tissues in the grasp of the clamp.

The stump may be treated by the *intra-* or *extraperitoneal* methods, the former being the means most commonly employed.

The removal of *dermoid* or *suppurating ovarian cysts* should be accomplished by enlarging the abdominal opening and removing the cyst entire.

Intraligamentous cysts should be enucleated bodily. The opposite ovary should also be removed if any evidence of cystic disease exists. Many operators recommend that as much of the ovarian and tubal tissue as is healthy should be left; especially is this the case if the patient is young. Small cysts may be punctured and be removed by the electrocautery. Exception to the above must be made in the case of papillary cysts.

Toilet of the Peritoneum.—The stump having been examined and found free from hemorrhage, it may be dropped back into the abdominal cavity, and the latter thoroughly sponged out. If the omentum has been adherent to the cyst and after tearing loose shows signs of oozing, it should be turned up over a towel wrung out of hot water, examined, and all bleeding vessels tied.

The cavity should now be thoroughly irrigated with a 0.6 per

cent. solution of common salt, either poured in by means of a pitcher or through a funnel with a rubber tube attached. In the latter case the tube should have a nozzle long enough to reach into Douglas's culdesac. Irrigation should be continued until the fluid returns clear. The abdominal cavity must now be dried out with a clean sponge, after which a large, flat sponge is placed over the intestines to keep them out of the way while the sutures are being introduced.

Suturing the Abdominal Wall.—There are many methods of closing the abdominal incision. The simplest one consists in introducing a single row of silk-worm gut, carrying each suture through the tissues, including the peritoneum. Care must be taken to draw the aponeurosis well forward over the recti muscles, or the aponeurosis may be closed by a separate row of sutures. This is done to guard against ventral hernia.

External Dressing.—After the wound is closed the abdomen must be washed with a 1 : 2000 solution of bichlorid of mercury and dried with sterilized towels. In both washing and drying the sponge and towel should be carried from the wound toward the sides of the abdomen. The wound should be dusted with sterilized iodoform, boric acid, or acetanilid, and over this several thicknesses of dry sublimated or sterile gauze are laid, and these in turn are covered by several layers of salicylated cotton, covered by borated gauze or a sterilized towel. The whole dressing should be held in place by a bandage or by strips of adhesive plaster to which tapes are attached. The adhesive strips are fastened to the sides of the abdomen and the tapes tied above the dressing. The dressing should be allowed to remain about a week before removal, providing it is not soiled.

Drainage.—In cases of cysts with extensive adhesions, suppurating cysts, or dermoids, it is well to use drainage. The methods preferred are the glass drainage-tube, or, better, the gauze drain of Mikulicz. When the glass tube is used the opening should be covered with absorbent cotton and a piece of rubber protective, so as to prevent soiling the dressings. Gauze drains should be covered with several layers of dry gauze, the latter being changed as often as soiled.

After-treatment of Ovariectomy.—After operation the patient

should be put to bed in a quiet room or ward and kept in a state of absolute rest. She should lie on her back with limbs extended or slightly flexed, with a pillow placed under her knees. No food of any sort and no liquids should be given, except, possibly, teaspoonful doses of hot water by the mouth, for twelve to twenty-four hours after the operation, until the period of ether vomiting has passed. When thirst is intense, enemata of two or three ounces of hot water, given at intervals of four or five hours, will often give relief. When vomiting occurs the mouth should be washed out with a damp cloth. After vomiting has entirely ceased, nourishment may be given by the mouth. It should consist of beef-tea, buttermilk, beef-extracts, soups, and broths. Milk, unless predigested, should be excluded, as it constipates and produces considerable flatus. If the patient is feeble, nourishment may be given by enema, and opium may be administered if there is much pain. No solid food should be allowed until a free evacuation of the bowels has taken place. From twelve to twenty-four hours after the operation the bowels should be opened by calomel in moderate doses followed by a Seidlitz powder, sulphate of magnesia, Rochelle salts, or, where the latter can not be used, compound licorice-powder may be substituted. When there is some flatus an enema of ℥ss of turpentine in a pint of hot soapsuds or one of the following should be given :

Castor oil,	f ℥ j
Yolk of one egg.	
Turpentine,	℥ j
Water to make	Oj.

Or—

Castor oil,	f ℥ j
Glycerin,	f ℥ iv
Turpentine,	f ℥ ij
Water to make	Oj.

Administer every three or four hours.

At the end of forty-eight hours, if the bowels have been well opened, the temperature nearly normal, and the pulse not exceeding 100 beats per minute, the patient is entering the period of convalescence.

Solid food may gradually be substituted for liquid diet. Soon after the operation the urine must be drawn off with a catheter. This should be repeated three or four times a day until the patient can void urine herself. If the intestines have been injured during operation absolute rest is required, opium should be administered, and the bowels not opened for four or five days.

The stitches in the abdominal wound should be removed on the eighth or tenth day and the wound redressed. An abdominal binder or broad belt should be worn for some time afterward.

When a drainage-tube has been inserted the rubber dam should, after a few hours, be unfastened, the cotton covering the mouth of the tube removed, and the fluid drawn out by means of a long-nozled syringe; great care must be exercised in cleaning the syringe, and the hands must be as carefully prepared as for the original operation. Each time the fluid is drawn off the drainage-tube should be twisted to prevent adhesions of lymph from forming. The tube may be removed at from thirty-six to forty-eight hours in many cases.

Septic infection following celiotomy is manifested by constipation, increasing abdominal distention due to flatulence; chills, followed by sweating; dull pains throughout the body; a temperature ranging from 100° to 102° F. or higher, falling in the morning and rising at night, and a pulse of 110 to 120 and upward. The mind in the later stages is somewhat clouded. When the case progresses toward death the temperature may rise to 106° or 107° F. or over, the pulse to 130 and upward. Vomiting is severe; the material ejected is usually of a dark-brown color.

Treatment.—If discovered thirty-six hours after operation, reopen the abdomen and flush out thoroughly. If this can not be done reduce temperature by sponging every three or four hours, nourish the patient by liquids given by mouth or rectum, and give whisky without stint or until the constitutional effects of alcohol are produced. From a pint to a quart of whisky has been given in twenty-four hours. Strychnin and quinin are valuable adjuncts. For the flatulence enemata of turpentine with soapsuds are useful. Strychnin may be given by the mouth at the same time. Hypodermic injections of antistreptococcic serum may be used.

DISEASES OF THE PERITONEUM AND CELLULAR TISSUE.

PELVIC PERITONITIS.

Synonyms.—Pelvic peritonitis; perimetritis. Pelvic cellulitis is sometimes known as parametritis.

Pelvic peritonitis is an acute or chronic inflammation of the pelvic peritoneum only; pelvic cellulitis is supposed to affect only the connective tissue of the pelvis. The difference between the two affections is practically a pathologic one only; clinically, both pelvic peritoneum and connective tissue share in the inflammatory process.

Causes.—Inflammation of the uterus, ovaries, or tubes, very commonly the latter; intraperitoneal growths; septic infection from instruments, pessaries, or gonorrhea, menstrual congestion, etc.; infection during the puerperal state.

Symptoms.—The *acute form* of pelvic inflammation begins with a chill, pain and tenderness over the lower part of the abdomen or on one or the other side of the uterus. The patient lies on her back, with her knees elevated, as this is the most comfortable position for her. The temperature rises to from 101° to 105° , and the pulse is 110 to 130 and rather wiry. Some nausea and vomiting are usually present. The bowels are constipated, the abdomen more or less enlarged and tympanitic, and the bladder irritable.

The *chronic form* manifests itself by dull, dragging pain in the pelvis, rectal and vesical irritability, menstrual disturbances, leukorrhea, and pain on sexual intercourse.

Physical Signs.—The examining finger in the vagina will find it hot and dry; pressure made in either culdesac gives great pain; the ovaries, tubes, and uterus seem matted together and give the impression of being set in glue or plaster-of-Paris. In Douglas's culdesac, or on one side of the uterus, a tumor can be felt; this usually is filled with pus and roofed in by adhesions. Palpation of the abdomen causes great pain.

The **results** of pelvic inflammation are: displacements of the uterus, tubes, and ovaries; disturbances of menstruation, sterility, or ectopic pregnancy.

Treatment.—In the acute form the patient should rest quietly in bed. In the beginning, especially if the temperature is high, ice-bags or the ice-water coil should be placed on the lower part of the abdomen; later turpentine stupes or applications of hot cloths are of use. Opium should be given for pain. The diet should be of liquids. The bowels should be moved by calomel, given in doses of about gr. ss-j until four or five grains have been taken; this may be advantageously followed by a saturated solution of magnesia sulphate, given in tablespoonful doses and repeated occasionally. Alcohol should be given if fever continues. The general system must be supported by tonics.

If suppuration occurs the treatment must be supportive in character. When the abscess is fully formed it should be evacuated, either through the vagina or by abdominal section, the most careful antiseptic precautions being observed.

In the chronic stage vaginal tampons of boroglycerin or ichthol and glycerin with iodine to the cervix are of service.

DISEASES OF THE BLADDER.

HYPOSPADIAS AND EPISPADIAS.

True hypospadias occurs when the bladder opens directly into the vestibule. It is caused during embryonic life by the urogenital sinus remaining unshortened by the descent of the ducts of Müller, after union has taken place. The urethra remains short and occupies an abnormally high position.

EPISPADIAS.—In this condition there is a defect in the anterior abdominal wall and anterior wall of the bladder; the symphysis pubis also is cleft. The anterior wall of the urethra is absent and the nymphæ and clitoris are generally split. This malformation is also known by the name of *extroversion* or *extrophy* of the bladder. The bladder may also be *bipartite*, consisting of two cavities, separated partially or completely by a septum.

IRRITABILITY OF THE BLADDER

May arise from purely functional causes, and is frequently found in nervous or hysterical women. It may follow abdominal operations or parturition. It is frequently present in patients with pelvic tumors, uterine or ovarian disease.

Symptoms closely simulate those of cystitis. The urine from an "irritable bladder" contains no pus, albumin, or tube-casts. Large deposits of amorphous urates or phosphate crystals will be found in microscopic examinations.

Treatment.—Purely constitutional, except after operations, when the bladder should be catheterized at intervals; or when beginning cystitis is suspected irrigations may occasionally be used. The following formulæ are recommended:

R. Atropin. sulphat., gr. ss
Aqueæ destillat., $\frac{\text{ʒ}}{3}$ iv. M.

SIG.—Five drops in water before meals.

R. Spirit. æther. nitrosi, f $\frac{\text{ʒ}}{3}$ j
Liq. potas. citratis, q. s. f $\frac{\text{ʒ}}{3}$ iv. M.

SIG.—A dessertspoonful every four hours.

In distinctly neurotic patients the bromids are frequently useful, attention at the same time being given to building up the general health by appropriate measures.

CYSTITIS.

Definition.—An inflammation of the mucous membrane lining the bladder. May be acute or chronic.

Causes.—*Acute cystitis* may be caused by exposure to cold, gonorrheal infection or infection by dirty instruments, particularly a catheter; pressure caused by the presenting part of the child during labor; acute inflammation of the pelvic peritoneum or pelvic organs; blows and falls, particularly when the bladder is full of urine; foreign bodies, and the improper use of certain drugs.

Chronic cystitis may arise from the continuance of the acute form, by pressure of an enlarged uterus, pelvic tumor, etc.

Pathology.—In the *acute form* no pathologic change, except increased redness and congestion, occurs in the mucous membrane; if, however, the inflammation continues, the bladder-walls become thickened and the surface of the mucous membrane covered with shreds of fibrin, pus, and cast-off epithelium. Hemorrhagic spots can sometimes be found marking the detachment of patches of epithelium.

In the *chronic form* the fibrous and muscular layers, as well as the mucosa, become hypertrophied, thus decreasing the size of the cavity of the bladder; its rugæ are very prominent and may

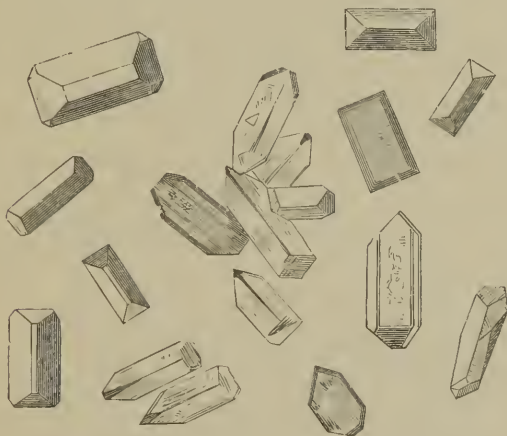


FIG. 137.—TRIPLE AMMONIUM MAGNESIA PHOSPHATES.

become actually polypoid. Deposits of phosphatic salts may take place in the ulcerated areas, causing great irritation. Dark, ecchymotic patches are seen in the mucous membrane, due to hemorrhage into its substance. In the diphtheric form the entire mucous membrane becomes covered with fibrinous material, which is thrown off as shreds or as entire casts of the organ.

The *urine* in cystitis is of high specific gravity, 1020 to 1030; the reaction, particularly in the earlier stages, is acid, but where decomposition has taken place it is generally intensely alkaline. The color when first voided may be of a reddish-brown or milky hue.

On examination it will be found to contain considerable mucus or pus and large amounts of salts, especially the phosphates. On standing, the urine throws down a reddish-yellow deposit; the presence of bacteria will generally produce turbidity.

The microscope reveals leukocytes in large numbers; red blood-corpuscles and pus-cells may also be present. Large patches of pavement epithelium and numbers of triple phosphate crystals are to be seen.

Symptoms.—The *acute form* begins with a chill, followed by moderate fever. There is considerable pain over the pubic region; painful urination, the urine becoming highly colored. These symptoms may last but a short time or continue; in the latter case the patient has an increased desire to urinate, especially at night, when it becomes almost constant. The urine is scant in quantity, cloudy, and ammoniacal. There is an almost continuous feeling of pressure over the bladder.

In the *diphtheric form* the patient may exhibit symptoms of typhoid condition, with daily rises of temperature and a rapid, feeble pulse. These symptoms may increase and the patient die in collapse. Renal disease with urinary suppression and uremia may appear as complications.

Treatment.—

Prophylactic.—Antiseptic cleanliness in the preparation of the catheter and instruments for vaginal examination.

Curative.—The acute form of cystitis should be treated by rest, hot applications over the lower part of the abdomen, and diluent drinks; those composed of flaxseed tea, mucilage of acacia, and the citrate or acetate of potash being especially useful. Warm baths at a temperature of 103° to 105° F. should be used to promote free diaphoresis. Opium by suppository or enema may be given when there is much pain. Suppositories of belladonna and iodoform are also recommended for the same purpose. To reduce fever and aid in promoting diaphoresis, the following is useful:

R.	Tinctura aconiti,	f ʒj	
	Spirit. æther. nitrosi,	f ʒ ij	
	Liq. potassii citratis,	q. s. f ʒ vj.	M.
SIG.	—A dessertspoonful every four hours.		

The diet should consist of milk and broths. All alcoholic liquors must be strictly prohibited. The bowels should be kept open by salines and enemata.

When the disease has become chronic, the patient must be kept on a bland diet, without much salt; vegetables, such as asparagus, containing large amounts of earthy salts, and all alcoholic liquors should be prohibited. If the urine is highly acid, it should be rendered neutral by the administration of benzoate of sodium; if highly alkaline, it must be rendered less irritating and diluted by such agents as the acetate or citrate of potassium. Any of the formulæ that are given below may be found useful:

R. Sodium benzoate or potassium citrate, . gr. v
 Infusion triticum repens, buchu, or uvæ
 ursi, ʒss. M.

SIG.—Administer the above at one dose every three hours.

R. Lupulin, ʒj
 Uvæ ursi fol., ʒij
 Aq. bullien., Oj. M.

And when cool add,

Tinct. opii camph., ʒij
 Sodii bicarb., ʒij. M.

SIG.—A teaspoonful four times a day.

R. Lupulin, ʒj
 Tinct. belladon., fʒj
 Tinct. opii camph., fʒij
 Sodii bicarb., ʒj
 Inf. buchu q. s. ut. ft., fʒvj.

SIG.—A tablespoonful in water three times a day.

Such mineral waters as Vichy, Bethesda, and Buffalo Lithia are recommended.

Great relief can often be given by washing out the bladder. This may be done by means of a glass funnel and rubber tube with a clean glass or rubber catheter. The injected fluid may consist of a fifty per cent. solution of boracic acid; weak solutions of permanganate of potassium; bichlorid of mercury in a strength

of 1 : 10,000; creolin, 3j to the quart, or silver nitrate two to four grains to the ounce. The fluid should be at a temperature of from 100° to 104° F., and should be injected very slowly. When there is great pain after silver nitrate has been used, the bladder should be irrigated with a five per cent. solution of sodium chlorid. Not more than two irrigations of any of the above should be given in one day.

The following has also been recommended :

R. Iodoform,	50.0
Glycerin,	40.0
Aquæ destillat.,	10.0
Mucilage of acacia,	q. s. to make an emulsion.

Method of Introducing the Catheter.—Either glass or rubber catheters may be used, the former being the better, as they are kept clean more easily. If of glass, the instrument should be boiled for five minutes and kept in a solution of carbolic acid; rubber catheters should be sterilized in a solution of bichlorid of mercury, 1 : 500. Before introducing the instrument, the external genital organs should be washed with a saturated solution of boracic acid, especial care being taken to cleanse around the urethral orifice. The patient lies on her back, with hips elevated on a bed-pan, the labia are separated with the thumb and forefinger of one hand, care being taken not to touch the parts around the orifice of the urethra, and the catheter introduced. The irrigating fluid should be allowed to flow in slowly and in small quantities, and the funnel then depressed so as to allow it to flow out. This should be repeated until the fluid comes out clear. Constant irrigation can be done by means of a return-flow catheter. The catheter should always be sterilized after using. About a pint to a quart of fluid may be used during the entire time of each irrigation. The urine should always be drawn off before the bladder is washed out; it is well, however, to leave a small quantity in to prevent the entrance of air when the catheter is introduced. It is sometimes necessary to dilate the urethra, using a small Goodell's dilator or graduated solid instruments, and inserting a self-retaining catheter, thus allowing the urine to constantly escape. In some

cases, when all other means of relief have failed, the operation of *colpocystotomy* must be performed. This consists of making an incision through the vesicovaginal septum and allowing the urine to escape by the vagina; the mucous membranes of the vagina

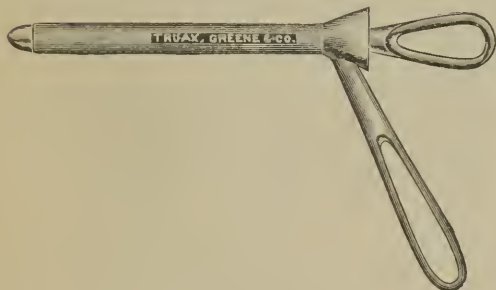


FIG. 138.—KELLY'S CYSTOSCOPE.

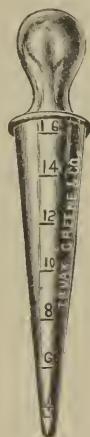


FIG. 139.—KELLY'S CALIBRATOR, FOR MEASURING SIZE OF URETHRA.

and bladder are united, thus making an artificial vesicovaginal fistula. After the operation the bladder should be washed out two or three times daily, and when the inflammation has subsided the fistula is repaired.

Catheterization of the Ureters.—The Kelly-Pawlik method

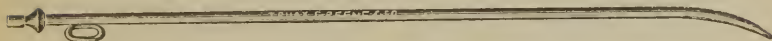


FIG. 140.—KELLY'S URETERAL CATHETER.

of performing this operation is as follows: The patient should be anesthetized, and the vulva and vagina made thoroughly aseptic. The dorsal position is used; the hips are to be well elevated. Some operators prefer the knee-chest position.

The instruments required are: Cystoscopes, Nos. 8, 10, 12, and 14; a set of urethral dilators; long, slender, mouse-toothed forceps; ureteral searcher; aluminium applicator; one metal and two flexible ureteral catheters; and a sucker to remove accumulated urine. A lamp and head mirror, or a specially constructed small electric-light bulb and reflector, will be necessary to use with the cystoscope.

The urethral orifice is well dilated by sounds. A No. 12 or 14 cystoscope is passed to its full length and the mouth of the urethra sought. The latter appears as a small elevation. When located, the catheter is introduced and gently pushed in the direction of the sacro-iliac joint. A flexible catheter should be used if it is necessary to enter the pelvis of the kidney.

If the operator is very expert he can, in some cases, introduce the catheter without general anesthesia, an application of a ten per cent. solution of cocain being made by means of cotton on an applicator to the urethra before dilatation.

INDEX.

- A.
- ABDOMINAL binder in anteversion, 120
 examinations, anesthetics in, 33
 hysterectomy for uterine fibromata, 187, 191
 operations, general technic, 18
 supporter for retaining uterus in position in retodisplacement, 136
 tumors causing prolapse, 141
 general diagnosis of, 34
- Abdominorectal examination, 42
 diagnostic points obtained by, 42
 uses of, 42
- Abscess of the vulvovaginal gland, 68
- Absorbent cotton, 25
- Acne of rubra, 73
- Acquired atresia of cervical canal, 161
 posterior displacements of uterus, 124
 stenosis of cervical canal, 161, 162
- Action of pessary in reposition of retrodisplacement, 136
- Acute cystitis, 249
 endometritis, 170-172
 inversion of uterus, 145
 metritis, 176-178
 oophoritis, 221, 222
 prolapse of uterus, 140
 salpingitis, 208-213
- Adhesions causing antelexion, 113
 to bowel from retrodisplacement, 125
- Adhesive vaginitis, 96
- Advantages of dilatation by Barnes' bag, 57
 of knee-chest position for retrodisplacement, 129
- After-treatment in introduction of dilator, 56
 in repair of vesicovaginal fistula, 103
 of abscess of vulvovaginal gland, 68
 of cervical operations, 170
 of colpocystotomy, 253
 of colpohysterectomy, 206
 of curetment in anterior displacements, 120
 of hysterorrhaphy, 134
 of introduction of pessary, 139
 of ovariectomy, 243-245
 of total abdominal hysterectomy, 192
 of using a tent, 54
- Age most susceptible to epithelioma of uterus, 197
 to sarcoma, 200
- Albert Smith pessary for prolapse, 144
- Alexander's operation for prolapse, 144
 for retrodisplacement, 131, 132
- Amenorrhea, 151-153
- Ampulla of oviduct, 208

Amputation of cervix in uterine carcinoma, 201
 of uterine neck as cause of acquired stenosis of cervical canal, 161
 Anatomy of ovary, 217
 of oviducts, 207, 208
 of perineum, 87
 of the uterus, 105-108
 of the vagina, 80, 81
 Anesthetics in abdominal examinations, 33
 Anomalies of uterus, 160
 Antelexion, 111
 of uterus, 112-116
 Anterior column of vagina, 80
 displacement of uterus, 111, 112
 Anteversion, 112
 of uterus, 116-122
 Antisepsis, 17
 of catheter, 252
 Antiseptics, 20, 21
 Appearance of virgin uterus, 106
 of wound and introduction of sutures in flap-splitting operation for incompletely lacerated perineum, 94
 Application of forceps before cervix is dilatable as cause of cervical laceration, 164
 Applicator, uterine, 52
 Arbor vitæ of cervix, 107
 Ardor urinæ in uterine prolapse, 142
 Areolar hyperplasia, 178-180
 Arnold sterilizer, 22
 Arterial supply of ovary, 218
 Arteries of external genitalia, 61
 of uterus, 108
 of vagina, 81
 Ascent of uterus, 111
 Ascites causing prolapse, 141
 Asepsis and antisepsis, 18
 Astringents in treatment of metrorrhagia, 154
 Atresia of cervical canal, 161-163
 of vagina, 81
 as cause of mechanical dysmenorrhea, 157

Auscultation, 33
 Average length of uterus, 105
 thickness of uterus, 105
 width of uterus, 105
 Avulsion for uterine fibromata, 186
 Axis of uterus, 106

B.

BAER'S operation for retrodisplacement, 133
 Barnes' bag for cervical dilatation, 56, 57
 Bartholini's glands, 60
 Beveling of edges in vesicovaginal fistula, 102
 Bilateral laceration of cervix uteri, 164
 Bimanual examination, diagnostic points obtained by, 39-42
 for antelexion, 115
 for anteversion, 118
 for ovarian cysts, 234
 in diagnosis of retrodisplacements, 126
 in prolapse of uterus, 142
 uses of, 39
 method of examination, 39
 of reduction in uterine inversion, 149
 reposition in treatment of retrodisplacements, 128
 Bipartite bladder, 247
 Bladder irritability, 248
 Blasius' flap-splitting operation for vesicovaginal fistula, 103
 Blood-supply of oviducts, 208
 Body of uterus, 106
 Brandt's method of gradual replacement in retrodisplacement, 130
 Braun's colpeurynter for inversion of uterus, 150
 for treatment of prolapse, 143
 dull douche curet, 58
 Broad ligament of uterus, 110

Bulbous portion of ovary, 217
 Bulls of vagina, 60

C.

- CACHEXIA in uterine carcinoma, 198
 in uterine sarcoma, 200
 Calcareous degeneration of fibromata of uterus, 180
 Canal of Nuck, 70
 Cancer of uterus, 194-199
 Carcinomata of ovary, 226
 of vagina, 99
 Carunculæ myrtiformes, 60
 Catarrhal salpingitis, 208
 vulvitis, 61
 Catheterization of ureters, 253, 254
 Causes affecting uterus primarily in menorrhagia, 154
 secondarily in metrorrhagia, 154
 of abscess of vulvovaginal gland, 68
 of acquired antelexion of uterus, 113
 of acute cystitis, 248
 endometritis, 170
 metritis, 176
 oophoritis, 221
 of amenorrhea, 151
 of antelexion of uterus, 113
 of anteversion of uterus, 117
 of ascent of uterus, 111
 of atresia of vagina, 82
 of carcinoma of uterus, 195
 of catarrhal vulvitis, 61
 of change in position of uterus, 110
 of chronic catarrhal vulvitis, 62
 cystitis, 248
 endometritis, 173, 174
 metritis, 178
 oophoritis, 222
 of coccygodynia, 76
 of congestion of ovaries, 220
 of congestive dysmenorrhea, 155
 of croupous vulvitis, 64
- Causes of cyst of the vulvovaginal gland, 67
 of cystitis, 248
 of death in inversion of uterus, 146
 of diabetic vulvitis, 65
 of diphtheric vulvitis, 64
 of eczema of vulva, 71
 of endometritis, 170, 171
 of fecal fistula, 101
 of fibromata of uterus, 182
 of follicular vulvitis, 66
 of gangrene of vulva, 65
 of gonorrheal vulvitis, 62
 of hematocele, 214
 of hematocolpos, 82
 of hemorrhage from the vulva, 71
 of hernia into the labium majus, 69
 of hydrocele of round ligament, 70
 of inversion of uterus, 145
 of irritability of bladder, 248
 of lacerated perineum, 87
 of laceration of cervix uteri, 164
 of mechanical dysmenorrhea, 157
 of membranous dysmenorrhea, 158
 of menorrhagia, 154
 of metrorrhagia, 154
 of noma, 65
 of ovarian congestion, 220
 cysts, 233
 of pelvic peritonitis, 246
 of phlegmonous vulvitis, 63
 of posterior displacements of uterus, 122
 of procidentia, 140, 141
 of prolapse of ovary, 219
 of uterus, 140, 141
 of vaginal walls, 83
 of pudendal hematoma, 70
 hernia, 69
 of rectovaginal fistula, 104
 of retrodisplacement of uterus, 122

Q

- Causes of salpingitis, 209
 of supravaginal hypertrophy of cervix, 163
 of tuberculosis of oviducts, 213
 of urethral caruncle, 77
 prolapse, 78
 stricture, 78
 of urethrocele, 78
 of uterine inversion, 145
 prolapse, 140, 141
 sarcoma, 200
 of vaginal prolapse, 83
 of vaginismus, 76
 of vaginitis, 95
 of vesicouterine fistula, 104
 of vulvar condylomata acuminata, 74
 lata, 74
 eczema, 71
 erysipelas, 74
 erythema, 72
 hemorrhage, 71
 herpes, 73
 scabies, 73
 of vulvovaginal hyperesthesia, 79
- Celiotomy for salpingitis, 212
- Cervical antelexion, 112
 catarrh causing antelexion, 113
 dilatation, 53-57
 by elastic dilators, 56, 57
 by operation, 57, 58
 by parallel dilators, 56
 by solid bougies, 54, 55
 by strip of gauze, 55
 by tents, 53
 endometritis, 170
 lacerations as cause of uterine carcinoma, 195
- Cervicocorporeal antelexion, 112
- Cervix, digital examination of, 36
 of uterus, 106
- Changes in size of uterus at puberty, 105
 during menstruation, 105
 in endometritis, 105
 in old age, 105
 in pregnancy, 105
- Changes in uterine function, 151-161
- Characteristics of adhesive vaginitis, 96
 of emphysematous vaginitis, 97
 of follicular vaginitis, 97
 of granular vaginitis, 95, 96
 of labia epitheliomata, 75
 of ovarian carcinomata, 226
 of pain in membranous dysmenorrhea, 159
 in neuralgic dysmenorrhea, 155
 of papillary ovarian cysts, 230, 231
 of parovarian cysts, 227, 228
 of sarcoma of labia and vulva, 75
 of simple vaginitis, 95
 of urine in cystitis, 249
 of vaginal carcinoma, 99
 fibroma, 100
 sarcoma, 99
 of vesicular vaginitis, 97
 of vulvar epithelioma, 75
- Cholesterin in ovarian cysts, 229
- Chronicized catgut ligatures, 23
- Chronic catarrhal vulvitis, 62
 cystitis, 249-254
 endometritis, 173, 178-180
 glandular endometritis, 173
 interstitial endometritis, 173
 inversion as cause of metrorrhagia, 154
 metritis, 178-180
 oophoritis, 222
 ovaritis as result of salpingitis, 210
 parenchymatous inflammation of the womb, 178
 prolapse of uterus, 140
- Cicatrical induration as cause of cervical dilatation, 165
- Circumscribed fibrous sarcoma of uterus, 200
- Clamp method for colpohysterectomy, 205
- Clitoris, 59
- Closure of abdominal opening in salpingitis, 209

- Coats of uterus, 107
 Coccygodynia, 76
 Cold as cause of acute endometritis, 170
 of amenorrhea, 151
 of congestive dysmenorrhea, 155
 of salpingitis, 209
 Colpocele, 83
 Colpocystotomy for cystitis, 253
 Colpohysterectomy for uterine carcinoma, 201-207
 Combined or bimanual method of examination, 39
 Complete inversion of uterus, 145
 laceration of perineum, 88
 prolapse of uterus, 140
 Complicated inversion of uterus, 146
 Complications of endometritis, 172
 of fibromata of uterus, 182
 Condition indicating a pessary, 121
 Congenital antelexion, 112
 atresia of cervical canal, 161
 atrophy of uterus, 161
 retroflexion of uterus, 122
 Congestion of broad ligaments from retrodisplacements, 125
 of ovaries, 220
 Congestive dysmenorrhea, 154, 155
 Consequences of cervical laceration, 165
 of fibromata of uterus, 182
 of retrodisplacements, 125
 Constipation in chronic prolapse of uterus, 142
 in retrodisplacements, 125
 Constitutional symptoms of congestive dysmenorrhea, 156
 Contents of dermoid ovarian cysts, 232
 of ovarian cysts, 231
 Contraindications for correction of retrodisplacement, 130
 for tapping in ovarian cystoma, 239
 for use of pessary in retrodisplacements, 137
 to radical treatment of cervical laceration, 167
 Cornstalk tents, 53
 Corporeal antelexion, 112
 endometritis, 170
 Corpus luteum, 218
 Course of needle with suture in repair of vesicovaginal fistula, 102
 Croupous vulvitis, 64
 Cumol method of preparing catgut, 23
 Cup repositor for inversion of uterus, 150
 Curative treatment of chronic endometritis, 179, 180
 of cystitis, 250
 Curet, the, 58
 dangers from the use of the, 58
 Curetment for prolapse, 144
 in anterior displacement of uterus, 119, 120
 in treatment of metrorrhagia, 154
 Cutaneous disease of the vulva, 71-74
 Cutter pessary for prolapse, 144
 Cyst of hydatid of Morgagni, 227
 of vulvovaginal gland, 67
 Cystic degeneration of fibromata of uterus, 180
 distention of oviducts, 208
 ovarian tumors, 227-247
 ovaritis as result of salpingitis, 210
 ovary in chronic oophoritis, 222
 salpingitis, 208
 tumors of ovary, 227-247
 vaginitis, 95, 98
 Cystitis, 248
 in uterine prolapse, 142
 Cystocele, 84, 140-144
 Cysts of corpus luteum, 227
 of organ of Rosenmüller, 228
 of ovary, 227-247
 of parovarium, 228
- D.
- DANGERS and disadvantages of tapping in ovarian cystoma, 239

- Dangers of the curet, 58
 of hematocolpos, 82
 Decidua menstrualis, 158
 Defectus uteri, 161
 Degeneration in ovarian cysts, 233
 Denudation in Emmet's operation
 for lacerated perineum, 89-91
 in Hegar's operation for posterior colporrhaphy, 91
 in trachelorrhaphy, 167
 of complete perineal rupture,
 with first two sutures uniting
 torn ends of sphincter ani in
 position, 92
 operation for vesicovaginal
 fistula, 102
 Depression of uterus, 145
 Dermoid cysts of ovary, 232
 Deschamps's needles in total abdominal hysterectomy, 191
 Determination of size of pessary, 137
 Development of oviducts, 207, 208
 Deviations of function of uterus, 151
 Diabetic vulvitis, 65
 Diagnosis, gynecologic, 31
 of abdominal tumors, 33, 34
 of abscess of vulvovaginal
 gland, 68
 of acute endometritis, 171
 of amenorrhea, 152
 of anteversion, 118
 of cervical laceration, 166
 of chronic oophoritis, 223
 of coccygodynia, 77
 of croupous vulvitis, 64
 of diphtheric vulvitis, 64
 of elephantiasis of labia and
 vulva, 75
 of fibrocysts, 183
 of fibromata of uterus, 183
 of follicular vulvitis, 66
 of gonorrheal vulvitis, 62
 of hematocele, 215
 of hernia into the labium majus,
 69
 of hydrocele of the round liga-
 ment, 70
 of infravaginal hypertrophy of
 cervix, 164
 Diagnosis of interstitial and sub-
 mucous fibroids, 183
 of inversion of uterus, 146
 of irritability of bladder, 248
 of membranous dysmenorrhea,
 159
 of ovarian cystomata, 234-238
 of phlegmonous vulvitis, 63
 of prolapse of uterus, 143
 of vaginal walls, 84
 of pudendal hematoma, 70
 hernia, 69
 of retrodisplacements, 125
 of salpingitis, 211
 of subserous fibroids, 183
 of supravaginal hypertrophy of
 cervix, 164
 of urethral caruncle, 77
 of urethrocele, 78
 of uterine inversion, 147-149
 sarcoma, 201
 of vaginal tumors, 36
 of vaginitis, 97
 of vesicovaginal fistula, 101
 of vulvar elephantiasis, 75
 Diagnostic characteristics of fibro-
 cysts, 183
 of subserous fibromata,
 183
 points in vaginal examination,
 34-37
 Diet in treatment of ovariectomy,
 244
 of chronic cystitis, 251
 of cystitis, 251
 Difference between flap-splitting op-
 eration for complete and incom-
 plete laceration of perineum, 94
 Differential diagnosis between as-
 cites and large
 ovarian cyst, 236
 anteflexion and fibro-
 mata on ante-
 rior wall of
 uterus, 116
 and inflamma-
 tory deposits
 in front of the
 cervix, 116

- Differential diagnosis between ante-
flexion and old
inflammatory
deposits, 116
and tumors on
anterior wall
of uterus, 116
appendicitis and
right-sided tubal
disease, 212
carcinoma of body
and uterine sar-
coma, 201
cervical stenosis and
fibrous tumors, 162
cervical stenosis and
malignant growths,
162
cervical stenosis and
ovarian cysts, 162
cervical stenosis and
pregnancy, 162
circumscribed sar-
coma and diffuse
sarcoma of uterus,
200
cystic degeneration of
chorion and uterine
carcinoma, 199
distended Fallopian
tube and small ova-
rian cystoma, 235
ectopic gestation and
hematocele, 215
encephaloid and scir-
rhous carcinoma of
uterus, 197
epithelioma and en-
cephaloid car-
cinoma, 197
and scirrhous car-
cinoma, 197
erosion of cervix with
ectropion and uter-
ine carcinoma, 199
extra-uterine preg-
nancy and small
ovarian cystoma,
235
- Differential diagnosis between exu-
dation in broad lig-
ament and oophor-
itis, 224
fat in abdominal wall
and large ovarian
cyst, 238
fecal masses in rec-
tum and oophoritis,
223
fibroid polypus and
partial uterine in-
version, 148
fibroids and hemato-
cele, 216
of uterus and
oophoritis, 223
hematocele and fibro-
mata, 183
hematometra and
ovarian cyst, 238
hemorrhagic or vil-
lous endometritis
and uterine sar-
coma, 201
hypertrophic elonga-
tion of cervix and
uterine carcinoma,
199
ovarian cysts and sal-
pingitis, 212
tumor and uter-
ine fibromata,
184
para-uterine deposits
and fibromata, 183
pelvic abscess and he-
matocele, 216
cellulitis and he-
matocele, 216
hematocele and
fibromata of
uterus, 183
hematocele and
ovarian cysts,
216
peritonitic exudate
and small ovarian
cystoma, 236

- Differential diagnosis between peritonitis and hematocele, 216
phantom tumor and large ovarian cyst, 238
phlegmonous vulvitis and displaced ovary, 64
vulvitis and hydrocele of round ligament, 64
vulvitis and labial hernia, 63
vulvitis and vulvar hematoma, 63
polypus and inversion of uterus, 148
pregnancy and large ovarian cyst, 237
and uterine fibromata, 184
prolapse and inversion of uterus, 147
pyo- and hydrosalpinx and salpingitis, 211
retained placenta and uterine carcinoma, 199
retrodisplacements and salpingitis, 212
and hematocele, 215
salpingitis and oophoritis, 224
sarcoma and fibroid tumor of ovary, 227
and retained placenta, 201
sloughing fibroid and uterine carcinoma, 199
- Differential diagnosis between
sloughing polypi and uterine carcinoma, 199
polypi and uterine sarcoma, 201
small cervical fibroids and uterine carcinoma, 199
ovarian cystoma and inflammatory exudation into broad ligament, 236
syphilitic ulceration and uterine carcinoma, 199
uterine fibroid and large ovarian cyst, 237
in retrodisplacements, 126
127
of chronic metritis, 179
of prolapse of uterus, 143
- Difficult and painful defecation in retroflexion, 123
- Diffuse sarcoma of mucous membrane, 200
- Digital eversion of the rectum, 38
examination, 34
by the rectum, 38
indications for, 38
- Dilatation and curetment in anterior displacements, 118-120
in cervical stenosis, 163
in treatment of obstructive dysmenorrhea, 157
of the cervix, 53-57
- Diphtheric vulvitis, 64
- Discharge in uterine carcinoma, 198
sarcoma, 200
- Diseases due to changes in position
of uterus, 108
of bladder, 247-254
of external genitalia, 71-80
of general system as cause of metrorrhagia, 154

- Diseases of ovaries, 217-247
 of oviducts, 208-217
 of peritoneum, 246, 247
 of tubes and ovaries as cause
 of metrorrhagia, 154
 of uterus, 108
 of vagina, 81-105
- Displacements of ovaries, 219,
 220
 of tubes, 219, 220
 of uterus, 111, 112
 as cause of congestive dys-
 menorrhea, 155
 following cervical laceration,
 166
- Divisions of cervix, 106
 of uterus, 105
- Dorsal position, 28
- Dorsosacral position, 28
- Douche curet in anterior displace-
 ments, 119, 120
- Drainage, 25
 after ovariectomy, 243
 by postural methods, 25, 26
 in colpohysterectomy, 206
- Drains, gauze, 25
 glass, 25
 Mikulicz, 25
 rubber, 25
- Dressings, 22
 in colpohysterectomy, 206
- Drugs in treatment of amenorrhea,
 153
 of chronic oophoritis, 242
 of neuralgic dysmenor-
 rhea, 155
- Dudley's operation for anterior dis-
 placements of uterus, 120
- Dull douche curet, 58
- Dysmenorrhea, 154-159
 in acquired retrodisplacements
 of uterus, 125
 in antelexion, 114
 in retrodisplacements, 125
 in retroflexions of uterus, 122
- Dysmenorrheal membrane, 158
- Dyspareunia in cervical laceration,
 166
- Dysuria in uterine prolapse, 142
- E.**
- ECTOPIC gestation as cause of
 metrorrhagia, 154
 pregnancy as result of salpingitis,
 210
- Ectropion following cervical laceration,
 166
 in uterine prolapse, 141
- Eczema of vulva, 71
- Elastic dilators for cervical dilata-
 tion, 56
- Electrical treatment of uterine fibro-
 mata, 185
- Electricity in treatment of chronic
 oophoritis, 225
 of amenorrhea, 153
- Elephantiasis of the labia and
 vulva, 75
- Emansio mensium, 152
- Emmett's anterior colporrhaphy for
 prolapse, 144
 method for reduction of uterine
 inversion, 149
 modified operation for incom-
 plete laceration of perineum,
 88-91
 operation for anterior colpor-
 rhaphy, 86
 trachelorrhaphy for cervical
 laceration, 157-159
- Emphysematous vaginitis, 97
- Encephaloid carcinoma of uterus,
 194-199
- Endometritis, 170
 as cause of menorrhagia, 154
 dessicans, 158
 from retrodisplacements, 125
 in retroflexion of uterus, 123
- Engorged portal circulation as cause
 of congestive dysmenorrhea, 155
- Enlargement of uterus in ante-
 version, 118
 in uterine sarcoma, 201
- Enterocoele, 84
- Enterovaginal hernia, 84
- Epispadias, 247
- Epithelioma of labia, 75
 of uterus, 194-199
 of vulva, 75

- Ergot in ovarian congestion, 220
treatment of uterine fibromata, 184
- Erosions in chronic endometritis, 175
of cervix as cause of uterine carcinoma, 195
in retrodisplacements, 125
- Erysipelas of vulva, 74
- Erythema of vulva, 72
- Examination, preparation for, 27
table, 27
- Examinations, gynecologic, 26
- Excessive exercise as cause of salpingitis, 209
- Excision of round ligament in Alexander's operation, 133
- Exciting causes of acquired posterior displacements of uterus, 124
of anteversion, 117
of uterine prolapse, 141
of vaginitis, 95
- Exfoliative endometritis, 158, 173
- Extensive laceration of perineum, 88
- Extent of cervical dilatation, 88
- External dressings in ovariectomy, 243
genital organs, inspection of, 31
relation of, 60
genitalia, 58-61
laceration of perineum, 88
- Extraperitoneal hematocoele, 214
method of treatment of stump in abdominal hysterectomy, 189, 190
treatment of stump in ovariectomy, 242
- Extrophy of bladder, 247

F.

- FACIES ovariana, 233
- Factors retaining uterus in position, 109-111
- Fatty degeneration of fibromata of uterus, 180

- Fecal fistula, 101
impaction as cause of metrorrhagia, 154
- Fetid discharge in uterine carcinoma, 198
- Fibroid tumors of uterus, 180-185
- Fibroids causing retrodisplacement of uterus, 124
- Fibromata causing antelexion, 113
of ovary, 226
of vagina, 100
of vulva, 75
- Fibrous polypus of uterus, 181
uterine polypi, 193
- Fimbriated extremity of oviduct, 208
- Fistulae of genitalia, 100-105
- Flexions and versions, 112
of uterus as cause of mechanical dysmenorrhea, 157
- Follicular ovarian cysts, 227
vaginitis, 97
vulvitis, 62, 66
- Fossa navicularis, 60
- Fouchette, 60
- Function of perineal body, 87
- Functions of uterine ligaments, 109
- Fundus of uterus, 106

G.

- GANGRENE in inversion of uterus, 146
of vulva, or noma, 65
- Gärtner's duct, 219
- Gastrohysteropexy for retrodisplacements, 133
- Gauze, bichlorid, 24
method of sterilizing, 24
sponges, 24
sterilizer, 25
- General diseases as cause of acute endometritis, 170
endometritis, 170
- Genital fistulae, 100
- Gentian-root tents, 53
- Genupectoral position, 30
- Glands of Bartholini, 60
of the vagina, 60

- Glandular proliferous cysts, 229
 uterine polypi, 193
 Glass drains, method of keeping
 clean, 25
 Gonococcus of Neisser, 98
 Gonorrhea as cause of acute endo-
 metritis, 170
 of oophoritis, 221
 vaginal secretion in, 32
 Gonorrheal vulvitis, 62
 Goodell's cervical dilator, 55,
 56
 Gottschalk's operation for retrodis-
 placements, 135
 Graafian follicles, 218
 Graily Hewitt's anteversion pessary,
 121
 Granular vaginitis, 95
 Gynecologic diagnosis, 31
 examination, 26
 history, 26
 positions, 28-30
 Gynecologist, preparation of hands
 of, 20
- H.**
- HABITUAL miscarriages as cause of
 uterine carcinoma, 195
 Hands, sterilization of, 20
 Hank's dilator, 55
 Headache in chronic uterine pro-
 lapse, 142
 in retrodisplacements, 125
 in retroflexion of uterus, 123
 Hegar's method of treating stump
 in abdominal hysterectomy,
 189, 190
 operation for posterior colpor-
 rhaphy, 91
 posterior colporrhaphy for pro-
 lapse, 144
 solid dilators, 54, 55
 Hematocolpos, 82
 Hematometra, 161
 Hematosalpinx, 208
 Hemophilia as cause of metrorrha-
 gia, 154
 Hemorrhage from the vulva, 71
 in acute prolapse, 142
 in treatment of retroflexion,
 124
 in uterine carcinoma, 198
 sarcoma, 200
 into cyst cavity, 233
 Hemostatic suture of the pelvic
 floor in Martin's colpohysterec-
 tomy, 204
 Hereditary tendency as cause of
 uterine carcinoma, 195
 Hernia into the labium majus, 69
 labialis inguinalis, 69
 of ovary, 219
 of tube, 219
 vaginalis labialis, 69
 Herpes of vulva, 73
 Higbee's bivalve speculum, 48
 High amputation of cervix for
 uterine carcinoma,
 201
 in infravaginal hyper-
 trophy of cervix,
 164
 History of patient, methods of ob-
 taining, 26
 Hodge-Smith pessary for retrodis-
 placements, 136
 Hydrocele of the round ligament,
 70
 Hydrometra, 161
 Hydronephrosis in prolapse of
 uterus, 142
 Hydrosalpinx, 208
 Hymen, 60
 annularis, 60
 cribriformis, 60
 fimbriatus, 60
 Hyperplasia of uterus following
 cervical laceration, 165
 Hypertrophic elongation of the
 cervix, 163
 Hypnotism in amenorrhea, 153
 Hypospadias, 247
 Hysteria in chronic prolapse, 142
 Hysteromyomectomy, 187
 Hysterorrhaphy for retrodisplace-
 ments, 133

I.

IMPERFORATE hymen, 60
 Impression given to examining finger in pelvic peritonitis, 246
 Incision in Alexander's operation for retrodisplacement, 132
 in Mackenrodt's operation, 135
 in treatment of cervical stenosis, 163
 of cervix in treatment of amenorrhea, 153
 of obstructive dysmenorrhea, 157
 of sac through vagina in salpingitis, 212
 Increased uterine weight causing prolapse, 141
 Indications for abdominal hysterectomy for uterine fibroids, 187
 for Alexander's operation for retrodisplacement, 131
 for colpohysterectomy, 201
 for curet, 58
 for ovariectomy, 239
 for palliative treatment in uterine carcinoma, 206
 for tapping ovarian cystoma, 239
 for use of pessary in retrodisplacements, 137
 Indigation, 34
 Infantile uterus, 161
 Infectious bacteria, 17
 Inflammation of uterus as cause of congestive dysmenorrhea, 155
 of the vagina, 95-98
 Inflammatory conditions causing antelexion, 113
 Infravaginal hypertrophy of the cervix, 163
 Infundibulopelvic ligament, 218
 Infundibulum of oviduct, 208
 Injection of microorganism of erysipelas for uterine cancer, 207
 Injuries during parturition as cause of acquired stenosis of cervical canal, 161
 Inspection, 31

Inspection of external genital organs, 31
 of vagina, 32
 Instrumental means of examination, 43
 Instruments for gynecologic examination, 43-52
 for ovariectomy, 240
 sterilization of, 21
 Internal laceration of perineum, 88
 Interstitial fibromata of uterus, 181
 Intraabdominal methods for shortening the round ligaments, 133
 Intraperitoneal hematocele, 214
 treatment of stump in abdominal hysterectomy, 189, 190
 in ovariectomy, 242
 Introduction of sutures in Emmet's operation for posterior colporrhaphy, 92
 Introversion of uterus, 145
 Inversion of uterus, 144-151
 Irrigation of bladder in chronic cystitis, 251
 Irritability from anteversion, 118
 in retrodisplacements, 125
 of bladder, 248
 Isthmus of oviduct, 208

J.

JUNIPERIZED catgut ligatures, 23

K.

KELLY'S method of closing the abdominal incision in ventrofixation, 134
 Knee-chest position in reduction of retrodisplacements, 128
 Kobelt's tubes, 219
 Kraurosis of vulva, 72
 Krug's frame, 20

L.

LABIA majora, 58
 minora, 59

- Lacerated perineum causing ante-
version, 117
prolapse, 141
retrodisplacements,
124
- Lacerations of cervix uteri, 164
- Lack of development as cause of
amenorrhea, 151
of uterine support causing pro-
lapse, 141
- Laminaria tents, 53
- Laparotomy for salpingitis, 212
- Large cysts of ovary, 229-247
- Lateral displacements of uterus,
111
- Left lateral position, 30
- Length of time a pessary is allowed
to remain, 122
a tent should remain, 54
of vaginal walls, 80
- Leukoplakia of vulva, 72
- Leukorrhea in ante flexion, 114
in chronic prolapse, 142
in retrodisplacements, 125
in retroflexion of uterus, 123
in uterine carcinoma, 198
vaginal, 26
- Ligaments of ovaries, 218
of uterus, 109
- Ligation of uterine artery in Mar-
tin's colpohysterectomy, 204
- Ligatures, 22
chromicized catgut, 23
juniperized catgut, 23
silk, 22
silkworm-gut, 23
- Lines of incision for flap-splitting
operation for complete
laceration of perineum,
94
for incomplete laceration
of perineum, 93
- Lipomata of vagina, 100
of vulva, 75
- Lithotomy position, 28
- Local symptoms of congestive dys-
menorrhea, 156
- Location for dilatation of tube in
salpingitis, 209
- Location for scirrhus carcinoma
of uterus, 197
for uterine sarcoma, 200
for vaginal carcinoma, 99
of cysts of parovarium, 228
of encephaloid cancer, 197
of epithelioma of uterus, 197
of oviducts, 208
of urethrovaginal fistula, 104
of vaginal carcinoma, 99
sarcoma, 99
of various forms of fistula, 100
- Lupus of vulva, 75
- Luxurious modes of life as cause of
amenorrhea, 151
- Lymphangiectasis of fibromata of
uterus, 181
- Lymphatics of external genitalia, 61
of uterus, 108
of vagina, 81
- M.**
- MACKENRODT'S operation for supra-
vaginal fixation, 134
- Malignant adenoma of uterus, 194
deciduoma, 199
disease as cause of metror-
rhagia, 154
neoplasms of the vagina, 99
tumors of labia, 75
of vulva, 75
- Manipulation of sound for correc-
tion of retrodisplacements, 129,
130
- Mann's operation for retrodisplace-
ment, 133
- Marine sponges, 24
- Martin's colpohysterectomy, 201-
207
myomectomy for uterine fibro-
mata, 192, 193
operation by ligation of uterine
arteries for cure of fibromata,
192, 193
posterior colporrhaphy for pro-
lapse, 144
- Meatus urinarius, 59
- Mechanic dysmenorrhea, 154, 156

- Medullary carcinoma of uterus, 197
 sarcoma of vulva, 75
- Membranous dysmenorrhea, 154, 158
- Menorrhagia, 153, 154
 in antelexion, 114
 in retrodisplacements, 125
- Mensuration, 32
- Mental anxiety as cause of uterine carcinoma, 197
- Mesosalphinx, 208
- Method, cumol, of preparing catgut, 23
 for removal of dermoid cysts, 242
 of intraligamentous cysts, 242
 of suppurating ovarian cysts, 242
 of examination for antelexion, 115
 of extension of uterine carcinoma, 195
 of introducing Barnes' bag, 57
 catheter in cystitis, 252
 cervical dilators, 55, 56
 a pessary, 137-140
 the Sims' speculum, 48
 the speculum, 50
 a tent, 54
- Methods for determination that pessary has been properly introduced, 138
 of obtaining a gynecologic history, 26
 of preparing hands for operations, 20, 21
 of reduction in retrodisplacements, 127
 of retaining uterus in position, 136
 of sterilization of hands, etc., 20
- Metritis, 176-180
 causing antelexion, 113
 following cervical laceration, 165
- Metrorrhagia, 153, 154
- Microscopic examination of fluid from ovarian tumors, 229
 of urine in cystitis, 250
- Mikulicz drains, 25
- Mineral waters in treatment of cystitis, 251
- Moderately curved scissors, 89
- Modified dorsal position, 28
- Mons veneris, 58
- Morcellement for uterine fibromata, 186
- Most frequent location for epithelioma, 197
- Mucous glands of vagina, 60
 layer of uterus, 107
 uterine polypi, 193
- Müller's ducts in formation of female genitalia, 160
- Multilocular ovarian cysts, 229, 230
- Mundé pessary for ovarian prolapse, 220
- Muscles of perineum, 87
- Muscular layer of uterus, 107
- Myomata of ovary, 226
- Myomectomy for uterine fibromata, 186
- Myxomatous degeneration of fibromata of uterus, 180

N.

- NABOTHIAN cysts, 108
 glands, 107
- Nerves of external genitalia, 61
 of uterus, 108
 of vagina, 81
- Nerve-supply of ovary, 219
- Nervous phenomena in chronic prolapse, 142
 in retrodisplacements, 125
- Neuralgic dysmenorrhea, 154, 155
- Noeggerath's method for reduction of inversion, 149
- Noma, or gangrene of vulva, 65
- Non-cystic salpingitis, 208
- Non-puerperal causes of inversion of uterus, 145

Normal condition of vaginal walls,
87
direction of axis of uterus, 106
position of uterus, 108, 109
Number of assistants for ovari-
otomy, 239, 240
of ovules in each ovary, 217
Nymphæ, 59

O.

OBESITY as cause of amenorrhea,
151
Object of pessary in anterior dis-
placements, 121
Objection to sound in correction of
retrodisplacements, 129
Oophoritis, 221-225
Oophoron, 217
Opening Douglas' culdesac in Mar-
tin's colpohysterectomy, 203,
204
the anterior vaginal fornix in
Martin's colpohysterectomy,
205
the vesicouterine pouch in
Martin's colpohysterectomy,
205
Operating room, 19
preparation of, 19, 20
Operation for complete perineal
laceration, 91, 92
Operations for cystocele, 85, 86
for rectocele, 85-95
for vesicovaginal fistulæ, 102,
103
in private houses, 20
Operative procedures for cervical
dilatation, 53-57
treatment for uterine carcinoma,
201-207
of retrodisplacement, 130-
140
of salpingitis, 212
Operator and his assistants, 20
Origin of dermoid cysts, 232
Ovarian abscess as result of salpin-
gitis, 210
carcinoma, 226

Ovarian dysmenorrhea, 154, 159
ligaments, 218
myomata, 226
sarcomata, 226
tumors, 225
Ovariectomy, 239
Overtaxing the nervous system as
cause of amenorrhea, 151

P.

PACHYSALPINGITIS, 208
Pain as a symptom, 26
in acute prolapse, 152
in chronic prolapse, 152
in ovarian dysmenorrhea, 159
in uterine carcinoma, 198
sarcoma, 200
Palliative operation for uterine car-
cinoma, 206
treatment of cervical laceration,
167
of fibromata of uterus, 184
of uterine carcinoma, 206
Palpation, 33
effect of abdominal massage in,
33
Papillary cysts of ovary, 231
proliferous cysts of ovary, 229
Papillomata of cervix, 193
of vulva, 74
Parallel cervical dilators, 54
Parametritis as cause of metrorrha-
gia, 154
as result of endometritis, 172
causing ante flexion, 113
Paroophoron, 217
Parovarium, 219
Partial inversion of uterus, 145
laceration of perineum, 88
Pathologic causes of amenorrhea, 151
changes in position of uterus,
111
Pathology of acquired retrodisplace-
ment of uterus, 124
of acute cystitis, 249
endometritis, 171
metritis, 177

- Pathology of acute oophoritis, 221
 of cervical laceration, 165
 of chronic cystitis, 249
 endometritis, 173
 metritis, 178
 oophoritis, 222
 of congenital retroflexion of uterus, 122
 of congestive dysmenorrhea, 156
 of fibromata of ovary, 226
 of uterus, 180
 of hematocele, 214
 of inversion of uterus, 146
 of mechanical dysmenorrhea, 157
 of membranous dysmenorrhea, 158
 of prolapse of uterus, 141, 142
 of retrodisplacements of uterus, 125
 of salpingitis, 209
 of tuberculosis of oviducts, 213
 of uterine carcinoma, 197
 inversion, 146
 polypi, 193
 prolapse, 141, 142
 sarcoma, 200
 of vaginitis, 95
 Patient, position of, 28
 preparation of, for abdominal operation, 18
 for vaginal operations, 18
 Peaslee's and Kammerer's solid dilators, 54
 Pedicle of ovarian cysts, 228
 Pediculi of vulva, 73
 Pedunculated parovarian cysts, 228
 Pelvic congestion in prolapse, 142
 hematocele, 213-217
 or uterine tumors as cause of congestive dysmenorrhea, 156
 peritonitis, 246
 as result of endometritis, 172
 tenesmus in retroflexion of uterus, 123
 Pelvimetry, 32
 Percussion and auscultation, 32
 Perimetritis as result of endometritis, 172
 Perineal anatomy, 87
 body, 87
 muscles, 87
 Perineotomy in Martin's colpohysterectomy, 203
 Peritonitis as cause of congestive dysmenorrhea, 156
 as result of salpingitis, 210
 causing anteclflexion, 113
 Periuterine hematoma, 213-217
 Persons most apt to have anteclflexion, 112
 Pessaries in anterior displacements, 121
 Pessary for retention of reposition in retrodisplacements, 136
 Phlegmonous vulvitis, 63
 Physical signs of acute endometritis, 171
 of cancer of body of uterus, 198
 of chronic endometritis, 174
 metritis, 179
 oophoritis, 223
 of encephaloid uterine carcinoma, 198
 of endometritis, 171
 of epithelioma of uterus, 198
 of hematocele, 215
 of inversion of uterus, 146
 of ovarian cysts, 234
 of pelvic peritonitis, 246
 of prolapse of uterus, 142
 of retroflexion of uterus, 123
 of salpingitis, 211
 of uterine carcinoma, 198
 polypi, 194
 prolapse, 142
 Physiologic causes of amenorrhea, 151
 Physometra, 163
 Placental uterine polypi, 193

- Plethora as cause of congestive dysmenorrhea, 155
- Polypoid endometritis, 173
- Polyps of uterus, 193, 194
- Position, dorsal, 28
- dorsosacral, 28
- for introduction of Barnes' bag, 57
- of dilator, 55, 56
- genupectoral, 30
- left lateral, or Sims', 30
- modified dorsal, or lithotomy, 28
- of body of uterus in ante-flexion, 112
- of cervix in ante-flexion, 115
- in anteversion, 116
- in inversion of uterus, 146
- in prolapse of first degree, 142
- of second degree, 142
- of third degree, 142
- in retroflexion, 122
- of fundus in retroflexion, 122
- of patient, 28
- for diagnosis of retrodisplacements, 125
- in bimanual reduction for inversion, 149
- reposition for retrodisplacements, 128
- in Emmet's operation for cervical laceration, 167
- in hysterorrhaphy, 133
- in introduction of pessary, 137
- of tent, 53
- in irrigation of bladder in cystitis, 252
- in Mackenrodt's operation, 135
- in Martin's colpohysterectomy, 203
- in reposition of prolapsed ovary, 220
- of retrodisplacements, 128
- in total abdominal hysterectomy, 191
- Position of patient in treatment of prolapse, 143
- of the operator's hands in bimanual reposition for retrodisplacements, 128
- of uterus due to distention of bladder, 109
- Trendelenburg, 28
- upright, 30
- Posterior displacements of the uterus, 122-140
- Predisposing causes of acquired posterior displacements of uterus, 124
- of anteversion, 117
- of ovarian cysts, 233
- of uterine prolapse, 141
- of vaginitis, 95
- Predisposition of race to carcinoma of uterus, 195
- Pregnancy causing retrodisplacements, 124
- Preliminaries to the use of tents, 53, 54
- Premature rupture of membranes as cause of cervical laceration, 164
- Preparation for an examination, 27
- of sponges, 24
- Preparatory treatment for abdominal hysterectomy for uterine fibromata, 188
- for introducing cervical dilators, 55
- for ovariectomy, 239
- for repair of lacerated perineum, 88
- to cure of cervical laceration, 167
- to use of Braun's colpeurynter, 144
- Preputium clitoridis, 59
- Pressure from above causing uterine prolapse, 141
- Private houses, preparation of operating room in, 20
- Procidentia of uterus, 140
- Profluent ovarian hydroids, 227
- Prognosis of acute inversion, 149
- of chronic inversion, 149

Prognosis of inversion of uterus,
148
of uterine carcinoma, 199
Prolapse of ovaries and tubes from
retrodisplacements, 125
of ovary, 219
of urethra, 78
of uterus, 140-144
of first degree, 140
of vaginal walls, 83
Proliferous cysts of ovary, 229
Prophylactic treatment of chronic
endometritis, 175
metritis, 179
of cystitis, 250
of salpingitis, 212
Prurigo of vulva, 73
Pruritus vulvæ, 67
Pudendal hematoma, 70
hernia, 69
Puerperal causes of inversion of
uterus, 145
Pyometra, 161
Pyosalpinx, 208

R.

RADICAL treatment of cervical
laceration, 167
of salpingitis, 212
Rapid cervical dilatation, 55, 56
expulsion of child as cause of
cervical laceration, 164
reduction of inversion by
White's method, 150
Recamier curet, 58
Rectal examination in antelexion,
116
in anteversion, 118
in chronic oophoritis, 223
in diagnosis of retrodis-
placement, 126
in inversion of uterus,
146
tenesmus in chronic uterine
prolapse, 142
in retrodisplacements, 125

Recto-abdominal method of exami-
nation, 39
Rectocele, 84, 140, 141
causing retrodisplacements of
uterus, 124
Rectolabial fistula, 101
Rectovaginal fistula, 101, 104
Rectum, digital eversion of, 38
examination of, 38
Régime of patients before and after
perineal operations, 95
Relations of the external genital
organs, 60
of ovaries, 217
of vagina, 80
Repeated parturitions as cause of
uterine carcinoma, 195
Replacement by the sound in retro-
displacement, 129
of inversion by instrumental
means, 150
Results of cervical stenosis, 161
of internal hemorrhage, 216
of pelvic peritonitis, 246
of salpingitis, 210
Retained secundines as cause of
metrorrhagia, 154
Retention of uterus in position after
the malposition has been cor-
rected, 127
Retentive power of abdominal cav-
ity, 110
Retroflexion of the body of uterus,
122
of uterus, 122
Retroposition with antelexion, 112
Retro-uterine hematocele, 213-217
Retroversioflexio, 125
Retroversion, 112
of uterus for ligation of broad
ligaments in colpohysterec-
tomy, 205
Rigid os as cause of cervical lacera-
tion, 165
Risks from opening a vulvovaginal
abscess, 68, 69
Round ligaments of uterus, 109
Rudimentarius uteri, 161
Rupture of ovarian cysts, 232

S.

- SALPINGITIS, 208-213
 with occlusion of ostium, with-
 out distention, 208
 Salpingo-oophorectomy, 192
 Sarcoma of labia, 75
 of uterus, 200-207
 of vulva, 75
 Sarcomata of ovary, 226, 227
 of vagina, 99
 Scabies of vulva, 73
 Schroeder's operation for cervical
 laceration, 169
 supravaginal amputation of cer-
 vix in uterine carcinoma,
 201
 Scirrhus carcinoma of labia, 75
 of uterus, 194
 of vulva, 75
 Seat of sarcoma of vulva, 75
 of scirrhus of labia, 75
 of vulvar and labial elephanti-
 asis, 75
 lupus, 75
 Sea-tangle tents, 53
 Sebaceous glands of vagina, 60
 Secondary results of cervical steno-
 sis, 163
 Senile atrophy as cause of stenosis
 of cervical canal, 161
 Separation of cyst sac in ovari-
 otomy, 241
 Sepsis as cause of acute endome-
 tritis, 170
 of oophoritis, 221
 of salpingitis, 209
 Septic infection following celiot-
 omy, 245
 Sequelæ of ovarian cysts, 232
 Serous layer of uterus, 107
 Sessile parovarian cysts, 228
 Shape of ovaries, 217
 of uterus, 105
 Sharp curet, 58
 Shock in acute prolapse, 142
 or fright as cause of amenor-
 rhea, 151
 Shortening of uterine canal in retro-
 flexion, 123
- Shortening the uterosacral liga-
 ments for retrodisplacements, 135
 Silk ligatures, 22
 Silk worm-gut ligatures, 23
 Silver wire, 22
 Simon's operation for cervical lacer-
 ation, 170
 speculum, 49
 spoon curet, 58
 Simple inversion of uterus, 145
 vulvar papillomata, 74
 Simpson's sound, 43
 Sims' curet, 58
 discission of posterior lip of
 cervix for ante flexion, 120
 position, 30
 retraction, 48, 49
 sound, 44
 speculum, disadvantages of,
 48
 method of introducing, 48
 modifications of, 48
 uses of, 49
 Size of ovaries, 217
 of oviducts, 208
 of uterus, 105
 Slight inversion of uterus, 145
 laceration of perineum, 88
 Slippery-elm tents, 53
 Small cysts of ovary, 227, 228
 Smith-Hodge pessary for antever-
 sion, 121
 Solid bougies for cervical dilatation,
 54
 ovarian tumors, 225-227
 Sound, the, 43
 dangers and contraindications
 to the use of the, 45
 in diagnosis of retrodisplace-
 ments, 126
 method of introducing the, 46
 preparation for the use of the,
 45
 uses of the, 44
 Spasmodic contractions at the in-
 ternal os as cause of mechanical
 dysmenorrhea, 157
 Specula, 47
 cylindric, 47

- Specula, position of patient for the introduction of, 48
 self-retaining, 50
 advantages and disadvantages of, 50
 sterilization of, 50
 trivalve, 49
 valvular, 47
 with two or more valves, 49
 Speculum, method of introducing, 50
 Simon's, 49
 Splitting cervix with curetment for uterine fibromata, 185
 Sponge tents, 53
 Sponges for ovariectomy, 240
 gauze, 24
 marine, 24
 Spontaneous atrophy of fibromata of uterus, 180
 Staffordshire knot in ovariectomy, 241
 Stellate lacerations of cervix uteri, 164
 Stem repositor for inversion of uterus, 150
 Stenosis of cervical canal, 151, 161-163
 of os uteri as cause of mechanical dysmenorrhea, 157
 or atresia of cervical canal as cause of amenorrhea, 151
 Steps in operation of abdominal hysterectomy for uterine fibromata, 188, 189
 of total abdominal hysterectomy, 191, 192
 of Emmet's operation for anterior colporrhaphy, 88, 89
 Sterility in antelexion, 114, 115
 in retroflexion of uterus, 122
 or habitual abortion in retrodisplacements, 125
 Sterilization of hands, 20
 of instruments, 21
 of ligatures, 22, 23
 Stoltz's anterior colporrhaphy for prolapse, 144
 Stoltz's operation for anterior colporrhaphy, 85
 Structure of uterus, 107
 of vagina, 80
 Subinvolution as cause of metrorrhagia, 154
 causing retrodisplacements, 124
 following cervical laceration, 165
 Submucous fibromata of uterus, 181
 tumors as cause of metrorrhagia, 154
 Subperitoneal hematocele, 214
 Subserous fibromata of uterus, 181
 Supplementary menstruation, 152
 Suppressio mensium, 152
 Supravaginal hypertrophy of cervix, 163
 hysterectomy for uterine fibromata, 187-190
 Surgical treatment of hematocele, 216
 Suture of abdominal wall in ovariectomy, 243
 Sutures, 22
 Symptoms of abscess of vulvovaginal gland, 68
 of acute cystitis, 250
 endometritis, 171
 inversion of uterus, 146
 metritis, 177
 oophoritis, 222
 pelvic peritonitis, 246
 prolapse of uterus, 142
 of amenorrhea, 152
 of antelexion, 114
 of anteversion of uterus, 117
 of atresia of vagina, 82
 of catarrhal vulvitis, 61
 of cervical laceration, 166
 of chronic endometritis, 174
 inversion of uterus, 146
 metritis, 178
 oophoritis, 222
 pelvic peritonitis, 246
 prolapse of uterus, 142
 of coccygodynia, 77
 of congenital retroflexion of uterus, 122

- Symptoms of congestion of ovaries, 220
 of congestive dysmenorrhea, 156
 of cyst of the vulvovaginal gland, 67
 of diabetic vulvitis, 65
 of diphtheric cystitis, 250
 of displacement of ovary, 219
 of fibromata of ovary, 226
 of uterus, 182
 of follicular vulvitis, 62, 66
 of gangrene of vulva, 65
 of gonorrheal vulvitis, 62
 of hematocolpos, 82
 of hernia into the labium majus, 69
 of infravaginal hypertrophy of cervix, 164
 of internal hemorrhage, 215
 of irritability of bladder, 248
 of lacerated perineum, 88
 of malignant neoplasms of vagina, 99
 of mechanical dysmenorrhea, 157
 of membranous dysmenorrhea, 159
 of myomata of ovary, 226
 of neuralgic dysmenorrhea, 155
 of noma, 65
 of obstructive dysmenorrhea, 157
 of ovarian congestion, 220
 cysts, 233
 dysmenorrhea, 159
 myomata, 226
 prolapse, 220
 of pelvic peritonitis, 246
 of phlegmonous vulvitis, 63
 of posterior displacements of uterus, 122
 of primary stage of hematocele, 215
 of prolapse of ovary, 220
 of uterus, 142
 of vaginal walls, 84
 of pruritus vulvæ, 67
- Symptoms of pudendal hematoma, 70
 hernia, 69
 of retrodisplacements of uterus,
 acquired, 125
 congenital, 122
 of salpingitis, 210
 of secondary stage of hematocele, 215
 of septic infection following ovariectomy, 245
 supravaginal hypertrophy of cervix, 164
 of urethrocele, 78
 of uterine carcinoma, 198
 inversion, 146
 polypi, 194
 prolapse, 142
 sarcoma, 200
 of vaginal prolapse, 84
 of vaginitis, 97
 of vesicovaginal fistulæ, 101
 of vulvar eczema, 71
 erysipelas, 74
 erythema, 72
 kraurosis, 72
 pediculi, 73
 scabies, 73
 of vulvovaginal hyperesthesia, 79
 Syphilitic salpingitis, 209
 Syringe, uterine, 52
- T.
- TAIT-SAENDER or flap-splitting operation for lacerated perineum, 92-94
 Tait suture in ovariectomy, 241
 Tamponing of vagina in treatment of retrodisplacements, 124, 129
 Tapping the cyst in ovariectomy, 241
 Technic of abdominal hysterectomy, 187-190
 of high amputation of cervix for uterine carcinoma, 201
 of Martin's colpohysterectomy, 201-207

- Technic of Martin's operation by
 ligation of uterine arteries,
 192, 193
 of operation for ovariectomy, 239
 of salpingo-oophorectomy, 192
 of tapping cyst in ovariectomy,
 241
 of total abdominal hysterec-
 tomy, 191, 192
 Telangiectatic tumors of uterus, 181
 Tenacula, 51
 forceps, 51
 and volsella, indications
 for the use of, 51
 uses of, 51
 Tents for dilatation of the cervix,
 53
 preliminaries to the use of, 53,
 54
 their varieties, 53
 Termination of acute oophoritis, 222
 Thomas anteversion pessary, 121
 curet, 50
 Thomas-Cutter pessary for uterine
 prolapse, 144
 Thomas' method for reduction of
 inversion, 150
 pessary for ovarian prolapse,
 220
 for retrodisplacements, 136
 Three degrees of inversion of uterus,
 145
 Thrombus of vulva, 70
 Time and method of evacuation of
 bowels after ovariectomy, 244
 for removal of stitches after
 ovariectomy, 245
 most favorable for Emmet's
 trachelorrhaphy, 169
 Toilet of perineum in ovariectomy,
 242
 of wound in after-treatment of
 ovariectomy, 245
 Too early application of forceps as
 cause of cervical laceration,
 164
 frequent coition as cause of
 uterine carcinoma, 197
 Tooth forceps, 89
 Topographic anatomy of round liga-
 ment, 131
 Topography of normal female pelvic
 organs, 107
 Torsion of pedicle of ovarian cyst,
 232
 Total abdominal hysterectomy, 191-
 193
 Trachelorrhaphy, 167
 Traction from below causing pro-
 lapse, 141
 Transplantation of ovarian cyst, 232
 Traumatism as cause of uterine car-
 cinoma, 197
 Treatment of abscess of vulvo-
 vaginal gland, 68
 of acute endometritis, 172
 metritis, 178
 oophoritis, 222
 pelvic peritonitis, 247
 of adhesive vaginitis, 98
 of amenorrhea, 153
 of antelexion, 118-122
 of anterior displacements of
 uterus, 118-122
 of anteversion, 118-122
 of catarrhal vulvitis, 61
 of cervical laceration, 167
 stenosis, 163
 of chronic catarrhal vulvitis, 62
 endometritis, 175, 176
 metritis, 179
 oophoritis, 224, 225
 pelvic peritonitis, 247
 of coccygodynia, 77
 of congestion of ovaries, 220
 of congestive dysmenorrhea,
 156
 of croupous vulvitis, 64
 of cyst of the vulvovaginal
 gland, 67
 of cystic vaginitis, 98
 of cystitis, 250-252
 of diabetic vulvitis, 65
 of diphtheric vulvitis, 64
 of displacement of ovary, 219
 of elephantiasis of labia and
 vulva, 75
 of existing endometritis, 175

- Treatment of fibromata of uterus, 184-207
 of vagina, 100
 of vulva, 75
 of follicular vulvitis, 62, 66
 of gangrene of vulva, 65
 of gonorrheal vaginitis, 98
 vulvitis, 62
 of hematocele, 216
 of hematocolpos, 82
 of hemorrhage from the vulva, 71
 of hernia into the labium majus, 69
 of hydrocele of round ligament, 70
 of infravaginal hypertrophy of cervix, 164
 of inversion of uterus, 148-151
 of irritability of bladder, 248
 of lacerated perineum, 88-95
 of lipomata of vagina, 100
 of vulva, 75
 of malignant neoplasms of vagina, 99
 tumors of labia and vulva, 75
 of mechanical dysmenorrhea, 157
 of membranous dysmenorrhea, 159
 of menorrhagia, 154
 of metrorrhagia, 154
 of neuralgic dysmenorrhea, 155
 of noma, 65
 of obstructive dysmenorrhea, 157
 of oophoritis, 224, 225
 of ovarian cysts, 239-245
 dysmenorrhea, 159
 of pelvic peritonitis, 247
 of phlegmonous vulvitis, 64
 of posterior displacements of uterus, 127-140
 of prolapse of ovary, 220
 of uterus, 143, 144
 of pruritus vulvæ, 67
 of pudendal hematoma, 70
 hernia, 69
- Treatment of rectovaginal fistula, 105
 of retroflexion of uterus, 123, 124
 of salpingitis, 212
 of septic infection following ovariectomy, 245
 of solid tumors of ovary, 227
 of supravaginal hypertrophy of cervix, 164
 of tuberculosis of oviducts, 213
 of urethral caruncle, 78
 prolapse, 79
 stricture, 78
 of urethrocele, 78
 of urethrovaginal fistulæ, 104
 of uterine carcinoma, 201-207
 inversion, 148-151
 polypi, 194
 prolapse, 143, 144
 of vaginal fibromata, 100
 prolapse, 84, 95
 of vaginismus, 76
 of vaginitis, 97, 98
 of vesicovaginal fistulæ, 101
 of vulvar acne, 73
 condylomata acuminata, 74
 lata, 74
 eczema, 71
 erythema, 72
 hemorrhage, 71
 herpes, 73
 kraurosis, 72
 lupus, 75
 pediculi, 74
 prurigo, 73
 scabies, 73
 vulvovaginal hyperesthesia, 80
- Trendelenburg position, 28
 Tuberculosis of oviducts, 213
 Tuberculous salpingitis, 209
 Tubo-ovarian cysts, 208, 227
 ligament, 218
 Tubules of parovarium, 219

Tumors blocking cervical canal as
 cause of obstructive dys-
 menorrhea, 157
 causing antelexion, 113
 of ovary, 225
 of uterus, 180-207
 of vulva, 74

Tupelo tents, 53

U.

UNILATERAL laceration of cervix
 uteri, 164

Unilocular ovarian cysts, 230, 231

Upright position, 30

Uretero-uterine fistula, 100

Ureterovaginal fistula, 100

Ureters, vaginal palpation of, 37

Urethral caruncle, 77

prolapse, 78

stricture, 78

Urethrocele, 78

Urethrovaginal fistula, 100, 104

Use of caustics as cause of acquired
 stenosis of cervical canal, 161
 of mechanical dilators as cause
 of cervical laceration, 165
 of sound in antelexion, 116
 of uterine dressing forceps, 51
 of volsella, 51

Uses of tenacula, 51

Uterine anatomy, 105-108

anomalies, 160

anteversion, 116-122

applicators, 51, 52

arteries, 108

cancer, 194-199

cervix, 106

coats, 107

corpus, 106

diseases, 108-207

displacements, 111

dressing forceps, 51, 52

epithelioma, 194-199

flexion, 112

inversion, 144-151

ligaments, 109

lymphatics, 108

nerves, 108

polypi, 193, 194

Uterine posterior displacements,
 122-140

prolapsed, 140

prolapse, 140-144

of first degree, 140

of second degree, 140

of third degree, 140

sarcoma, 200-207

syringe, 52

tumors, 180-207

veins, 108

version, 112

Uterosacral ligament of uterus, 109

Uterovesical ligament of uterus, 109

Uterus bicornis, 161

duplex or didelphys, 161

septus, 161

unicornus, 161

Utricular glands, 107

V.

VAGINA, digital examination of, 34
 inspection of, 32

Vaginal anatomy, 80, 81

bulbs, 60

carcinoma, 99

discharge, 26

in uterine cancer, 27

discharges, 26

enucleation for uterine fibro-
 mata, 185, 186

examination in diagnosis of
 retrodisplacements, 125

fibromata, 100

glands, 60

hysterectomy for uterine carci-
 noma, 201

in treatment of menorrha-
 gia, 154

injections in treatment of men-
 orrhagia, 154

irrigation in anterior displace-
 ments, 119

leukorrhoea, 26

lipomata, 100

massage for chronic oophoritis,
 224

mucous membrane, color of, in
 pregnancy, 32

- Vaginal operations, general technic, 18
 palpation of the ureters, 37
 prolapse, 83-95
 due to perineal laceration, 87-95
 sarcoma, 99
 secretion, 32
 Vaginismus, 76
 Vaginitis, 95-98
 Varicocele of pampiniform plexus in prolapse, 142
 Varicose degeneration of cervical vessels in prolapse, 141
 Various diseases as cause of amenorrhea, 151
 of acute endometritis, 170
 of ante flexion of uterus, 112
 of chronic endometritis, 173
 metritis, 178
 of dysmenorrhea, 154
 of fibromata of uterus, 181
 of genital fistulæ, 100
 of hymen, 60
 of inversion of uterus, 145, 146
 of lacerations of perineum, 87, 88
 of non-cystic salpingitis, 208
 of oophoritis, 221
 of pudendal hernia, 69
 of tents, 53
 of uterine diseases, 108
 polypi, 193
 of vaginal prolapse, 83
 of vaginitis, 95
 of vulvitis, 61
 Veins of external genitalia, 61
 of uterus, 108
 of vagina, 81
 Ventrofixation for retrodisplacements, 133
 Version of uterus, 112
 Versions and flexions, 112
 Vertical tubules, 219
 Vesical irritability in chronic prolapse, 142
 Vesico-uterine fistula, 100, 104
 Vesico-utero vaginal fistula, 100
 Vesicovaginal fistula, 100, 101
 Vesicovaginal fistula following cervical laceration, 166
 Vesicular vaginitis, 97
 Vessels and nerves of external genitalia, 61
 Vestibule, 59
 Viburnum prunifolium in treatment of neuralgic dysmenorrhea, 155
 Vicarious menstruation, 152
 Volsella, 51
 Vulvar acne, 73
 condylomata acuminata, 74
 lata, 74
 cutaneous diseases, 71-74
 eczema, 71
 erysipelas, 74
 erythema, 72
 hematocele, 70
 hemorrhage in children, 71
 herpes, 73
 kraurosis, 72
 leukoplakia, 72
 lupus, 75
 pediculi, 73
 prurigo, 73
 scabies, 73
 tumors, 74
 Vulvitis, 61-66
 Vulvovaginal gland, abscess of, 68
 cyst of, 67
 glands, 60
 hyperesthesia, 79
- W.**
- WEIGHT of ovaries, 217
 White's egg-beater repositor for inversion of uterus, 150
 Winckel's operation for anterior colporrhaphy, 86
 Wire-loop curet, 58
 Women most susceptible to retrodisplacements, 124
 Wylie's operation for retrodisplacement, 133
- X.**
- XENOMENIA, 152

CLASSIFIED SUBJECT
CATALOGUE
OF
MEDICAL BOOKS
AND

Books on Medicine, Dentistry, Pharmacy,
Chemistry, Hygiene, Etc., Etc.,

PUBLISHED BY

P. BLAKISTON'S SON & Co.,


Medical Publishers and Booksellers,

1012 WALNUT STREET, PHILADELPHIA.

SPECIAL NOTE.—The prices given in this catalogue are absolutely net, no discount will be allowed retail purchasers under any consideration. This rule has been established in order that everyone will be treated alike, a general reduction in former prices having been made to meet previous retail discounts. Upon receipt of the advertised price any book will be forwarded by mail or express, all charges prepaid.


We keep a large stock of Miscellaneous Books, not on this catalogue, relating to Medicine and Allied Sciences, published in this country and abroad. Inquiries in regard to prices, date of edition, etc., will receive prompt attention.

Special Catalogues of Books on Pharmacy, Dentistry, Chemistry, Hygiene, and Nursing will be sent free upon application.


 **SEE NEXT PAGE FOR SUBJECT INDEX.**


Gould's Dictionaries, Page 8.

SUBJECT INDEX.

 Any books not on this Catalogue we will furnish a price for upon application.

SUBJECT.	PAGE	SUBJECT.	PAGE
Alimentary Canal (see Surgery) ..	19	Nose.....	20
Anatomy (see Miscellaneous) ..	14	Nursing	15
Anesthetics	3	Obstetrics.....	16
Autopsies (see Pathology)	16	Ophthalmology.....	9
Bacteriology (see Pathology) ..	16	Osteology (see Anatomy).....	3
Bandaging (see Surgery).....	19	Pathology	16
Brain	4	Pharmacy	16
Chemistry	4	Physical Diagnosis	17
Children, Diseases of	6	Physical Training (see Miscellaneous)	14
Clinical Charts	6	Physiology	18
Compendis	22, 23	Poisons (see Toxicology)	13
Consumption (see Lungs).....	11	Popular Medicine.....	10
Dentistry	7	Practice of Medicine	18
Diagnosis.....	17	Prescription Books.....	18
Diagrams (see Anatomy, page 3, and Obstetrics, page 16).		Railroad Injuries (see Nervous Diseases).....	14
Dictionaries	8	Refraction (see Eye)	9
Diet and Food (see Miscellaneous)	14	Rheumatism	10
Dissectors	3	Sanitary Science	11
Domestic Medicine	10	Skin.....	19
Ear	8	Spectacles (see Eye).....	9
Electricity	9	Spine (see Nervous Diseases) ..	14
Emergencies (see Surgery).....	19	Stomach (see Miscellaneous)...	14
Eye	9	Students' Compendis.....	22, 23
Fevers	9	Surgery and Surgical Diseases.....	19
Gout	10	Syphilis	21
Gynecology	21	Technological Books.....	4
Hay Fever.....	20	Temperature Charts.....	6
Heart	10	Therapeutics	12
Histology.....	10	Throat	20
Hospitals (see Hygiene).....	11	Toxicology.....	13
Hygiene.....	11	Tumors (see Surgery).....	19
Insanity	4	U. S. Pharmacopœia	16
Latin, Medical (see Miscellaneous and Pharmacy).....	14, 16	Urinary Organs	20
Lungs	12	Urine	20
Massage.....	12	Venereal Diseases.....	21
Materia Medica.....	12	Veterinary Medicine.....	21
Medical Jurisprudence	13	Visiting Lists, Physicians' (Send for Special Circular.)	
Microscopy	13	Water Analysis (see Chemistry).....	5
Milk Analysis (see Chemistry) ..	4	Women, Diseases of.....	21
Miscellaneous	14		
Nervous Diseases	14		

 The prices as given in this Catalogue are net. Cloth binding, unless otherwise specified. No discount can be allowed under any circumstances. Any book will be sent, postpaid, upon receipt of advertised price.

 All books are bound in cloth, unless otherwise specified. All prices are net.

ANATOMY.

MORRIS. Text-Book of Anatomy. 2d Edition. Revised and Enlarged. 790 Illustrations, 214 of which are printed in colors. *Just Ready.* Cloth, \$6.00; Leather, \$7.00; Half Russia, \$8.00

"Taken as a whole, we have no hesitation in according very high praise to this work. It will rank, we believe, with the leading Anatomies. The illustrations are handsome and the printing is good."—*Boston Medical and Surgical Journal.*

Handsome Circular of Morris, with sample pages and colored illustrations, will be sent free to any address.

BROOMELL. Anatomy and Histology of the Human Mouth and Teeth. 284 Illustrations. \$4 50

DEAVER. Surgical Anatomy. A Treatise on Human Anatomy in its Application to Medicine and Surgery. With about 400 very Handsome full-page Illustrations Engraved from Original Drawings made by special Artists from dissections prepared for the purpose. Three Volumes. Royal Square Octavo
Cloth, \$21.00; Half Morocco or Sheep, \$24 00; Half Russia, \$27.00

ECKLEY. Practical Anatomy. A Manual for the use of Students in the Dissecting Room. Based upon Morris' Text-Book of Anatomy and Including a Section on the Fundamental Principles of Anatomy. With 347 Illustrations, many of which are in colors. *Just Ready.*
Cloth, \$3 50; Oil Cloth, \$4 00

GORDINIER. Anatomy of the Central Nervous System. With 271 Illustrations, many of which are original. *Just Ready.*
Cloth, \$6.00; Sheep, \$7.00

HEATH. Practical Anatomy. 8th Edition. 300 Illus. \$4.25

HOLDEN. Anatomy. A Manual of the Dissections of the Human Body. Carefully Revised by A. HAWSON, M.D., Demonstrator of Anatomy, Jefferson Medical College, Philadelphia. 311 Illustrations. 7th Edition. *In Press.*

HOLDEN. Human Osteology. Comprising a Description of the Bones, with Colored Delineations of the Attachments of the Muscles. The General and Microscopical Structure of Bone and its Development. With Lithographic Plates and numerous Illus. 8th Ed. \$5.25

HOLDEN. Landmarks. Medical and Surgical. 4th Ed. \$1 00

MACALISTER. Human Anatomy. Systematic and Topographical, including the Embryology, Histology, and Morphology of Man. With Special Reference to the Requirements of Practical Surgery and Medicine. 816 Illustrations. Cloth, \$5.00; Leather, \$6.00

MARSHALL. Physiological Diagrams. Life Size, Colored. Eleven Life-Size Diagrams (each seven feet by three feet seven inches). Designed for Demonstration before the Class.

In Sheets, Unmounted, \$40.00; Backed with Muslin and Mounted on Rollers, \$60.00; Ditto, Spring Rollers, in Handsome Walnut Wall Map Case, \$100.00; Single Plates—Sheets, \$5.00; Mounted, \$7.50. Explanatory Key, .50. *Purchaser must pay freight charges.*

POTTER. Compend of Anatomy, Including Visceral Anatomy. 6th Ed. 16 Lith. Plates and 117 other Illus. .80; Interleaved, \$1.25

WILSON. Human Anatomy. 11th Edition. 429 Illustrations, 26 Colored Plates, and a Glossary of Terms. \$5.00

WINDLE. Surface Anatomy. Colored and other Illus. \$1.00

BRAIN AND INSANITY.

- BLACKBURN.** *A Manual of Autopsies.* Designed for the Use of Hospitals for the Insane and other Public Institutions. Ten full-page Plates and other Illustrations. \$1.25
- GORDINIER.** *The Gross and Minute Anatomy of the Central Nervous System.* With many full-page and other Illustrations. 8vo. *Just Ready.* Cloth, \$6.00; Sheep, \$7.00
- GOWERS.** *Diagnosis of Diseases of the Brain.* 2d Edition. Illustrated. \$1.50
- HORSLEY.** *The Brain and Spinal Cord.* The Structure and Functions of. Numerous Illustrations. \$2.50
- LEWIS (BEVAN).** *Mental Diseases.* A Text-Book Having Special Reference to the Pathological Aspects of Insanity. 26 Lithographic Plates and other Illustrations. 2d Ed. *Just Ready.* \$7.00
- MANN.** *Manual of Psychological Medicine and Allied Nervous Diseases.* Their Diagnosis, Pathology, Prognosis, and Treatment, including their Medico-Legal Aspects; with chapter on Expert Testimony, and an Abstract of the Laws Relating to the Insane in all the States of the Union. Illustrated. \$3.00
- REGIS.** *Mental Medicine.* Authorized Translation by H. M. BANNISTER, M.D. \$2.00
- STEARNS.** *Mental Diseases.* Designed especially for Medical Students and General Practitioners. With a Digest of Laws of the various States Relating to Care of Insane. Illustrated. Cloth, \$2.75; Sheep, \$3.25
- TUKE.** *Dictionary of Psychological Medicine.* Giving the Definition, Etymology, and Symptoms of the Terms used in Medical Psychology, with the Symptoms, Pathology, and Treatment of the Recognized Forms of Mental Disorders, together with the Law of Lunacy in Great Britain and Ireland. Two volumes. \$10.00
- WOOD, H. C.** *Brain and Overwork.* .40

CHEMISTRY AND TECHNOLOGY.

Special Catalogue of Chemical Books sent free upon application.

- ALLEN.** *Commercial Organic Analysis.* A Treatise on the Modes of Assaying the Various Organic Chemicals and Products Employed in the Arts, Manufactures, Medicine, etc., with concise methods for the Detection of Impurities, Adulterations, etc. 8vo.
- Vol. I. Alcohols, Neutral Alcoholic Derivatives, etc., Ethers, Vegetable Acids, Starch, Sugars, etc. 3d Edition, by HENRY LEFFMANN, M.D. \$4 50
- Vol. II, Part I. Fixed Oils and Fats, Glycerol, Explosives, etc. 3d Edition, by HENRY LEFFMANN, M.D. *Just Ready.* \$3 50
- Vol. II, Part II. Hydrocarbons, Mineral Oils, Phenols, etc. 3d Edition, by HENRY LEFFMANN, M.D. *Nearly Ready.*
- Vol. III, Part I. Acid Derivatives of Phenols, Aromatic Acids, Tannins, Dyes and Coloring Matters. 3d Edition. Revised by J. MERRITT MATHEWS, PH.D., of the Philadelphia Textile School. *In Preparation.*
- Vol. III, Part II. The Amines, Hydrazines and Derivatives, Pyridine Bases. The Antipyretics, etc. Vegetable Alkaloids, Tea, Coffee, Cocoa, etc. 8vo. 2d Edition. \$4 50
- Vol. III, Part III. Vegetable Alkaloids, Non-Basic Vegetable Bitter Principles. Animal Bases, Animal Acids, Cyanogen Compounds, etc. 2d Edition, 8vo. \$4.50
- Vol. IV. The Proteids and Albuminous Principles. 2d Edition. *Just Ready.* \$4 50

- ALLEN. Albuminous and Diabetic Urine. Illustrated. \$2.25
- BARTLEY. Medical and Pharmaceutical Chemistry. A Text-Book for Medical, Dental, and Pharmaceutical Students. With Illustrations, Glossary, and Complete Index. 5th Edition, carefully Revised. *Just Ready.* Cloth, \$3.00; Sheep, \$3.50
- BARTLEY. Clinical Chemistry. The Examination of Feces, Saliva, Gastric Juice, Milk, and Urine. *Just Ready.* \$1.00
- BLOXAM. Chemistry, Inorganic and Organic. With Experiments. 8th Ed., Revised 281 Engravings. Clo., \$4.25; Lea., \$5.25
- CALDWELL. Elements of Qualitative and Quantitative Chemical Analysis. 3d Edition, Revised. \$1.50
- CAMERON. Oils and Varnishes. With Illustrations. \$2.25
- CAMERON. Soap and Candles. 54 Illustrations. \$2.00
- GARDNER. The Brewer, Distiller, and Wine Manufacturer. Illustrated. \$1.50
- GARDNER. Bleaching, Dyeing, and Calico Printing. \$1.50
- GROVES AND THORP. Chemical Technology. The Application of Chemistry to the Arts and Manufactures.
Vol. I. Fuel and Its Applications. 607 Illustrations and 4 Plates. Cloth, \$5.00; Half Morocco, \$6.50
Vol. II. Lighting. Illustrated. Cloth, \$4.00; Half Morocco, \$5.50
Vol. III. Lighting—Continued. *In Press.*
- HOLLAND. The Urine, the Gastric Contents, the Common Poisons, and the Milk. Memoranda, Chemical and Microscopical, for Laboratory Use. 5th Ed. Illustrated and interleaved, \$1.00
- LEFFMANN. Compend of Medical Chemistry, Inorganic and Organic. Including Urine Analysis. 4th Edition, Rewritten and Revised. .80; Interleaved, \$1.25
- LEFFMANN. Analysis of Milk and Milk Products. Arranged to Suit the Needs of Analytical Chemists, Dairymen, and Milk Inspectors. 2d Edition. Enlarged, Illustrated. \$1.25
- LEFFMANN. Water Analysis. For Sanitary and Technic Purposes. Illustrated. 4th Edition. *Just Ready.* \$1.25
- LEFFMANN. Structural Formulæ. Including 180 Structural and Stereo-Chemical Formulæ. 12mo. Interleaved. \$1.00
- MUTER. Practical and Analytical Chemistry. 2d American from the Eighth English Edition. Revised to meet the requirements of American Medical Colleges by CLAUDE C. HAMILTON, M.D. 56 Illustrations. \$1.25
- OETTEL. Exercises in Electro-Chemistry. Illustrated. .75
- OETTEL. Electro-Chemical Experiments. Illustrated. .75
- RICHTER. Inorganic Chemistry. 4th American, from 6th German Edition. Authorized translation by EDGAR F. SMITH, M.A., PH.D. 89 Illustrations and a Colored Plate. \$1.75
- RICHTER. Organic Chemistry. 3d American Edition. Trans. from the 8th German by EDGAR F. SMITH. Illustrated. 2 Volumes. Vol. I. Aliphatic Series. 625 Pages. *Just Ready.* \$3.00
Vol. II. Carbocyclic Series. *In Press.*
- SMITH. Electro-Chemical Analysis. 2d Edition, Revised. 28 Illustrations. \$1.25
- SMITH AND KELLER. Experiments. Arranged for Students in General Chemistry. 3d Edition. Illustrated. .60
- STAMMER. Chemical Problems. With Answers. .50

- SUTTON.** Volumetric Analysis. A Systematic Handbook for the Quantitative Estimation of Chemical Substances by Measure, Applied to Liquids, Solids, and Gases. 7th Edition, Revised. 112 Illustrations. \$4.50
- SYMONDS.** Manual of Chemistry, for Medical Students. 2d Edition. \$2.00
- TRAUBE.** Physico-Chemical Methods. Translated by Hardin. 97 Illustrations. \$1.50
- ULZER AND FRAENKEL.** Chemical Technical Analysis. Translated by Fleck. Illustrated. \$1.25
- WOODY.** Essentials of Chemistry and Urinalysis. 4th Edition. Illustrated. *In Press.*

**** Special Catalogue of Books on Chemistry free upon application.*

CHILDREN.

- CAUTLIE.** Feeding of Infants and Young Children by Natural and Artificial Methods. \$2.00
- HALE.** On the Management of Children. .50
- HATFIELD.** Compend of Diseases of Children. With a Colored Plate. 2d Edition. .80; Interleaved, \$1.25
- MEIGS.** Infant Feeding and Milk Analysis. The Examination of Human and Cow's Milk, Cream, Condensed Milk, etc., and Directions as to the Diet of Young Infants. .50
- POWER.** Surgical Diseases of Children and their Treatment by Modern Methods. Illustrated. \$2.50
- STARR.** The Digestive Organs in Childhood. The Diseases of the Digestive Organs in Infancy and Childhood. With Chapters on the Investigation of Disease and the Management of Children. 2d Edition, Enlarged. Illustrated by two Colored Plates and numerous Wood Engravings. \$2.00
- STARR.** Hygiene of the Nursery. Including the General Regimen and Feeding of Infants and Children, and the Domestic Management of the Ordinary Emergencies of Early Life, Massage, etc. 6th Edition. 25 Illustrations. \$1.00
- SMITH.** Wasting Diseases of Children. 6th Edition. \$2.00
- TAYLOR AND WELLS.** The Diseases of Children. Illustrated. A New Manual. 746 pages. *Just Ready.* \$4.00

CLINICAL CHARTS.

- GRIFFITH.** Graphic Clinical Chart for Recording Temperature, Respiration, Pulse, Day of Disease, Date, Age, Sex, Occupation, Name, etc. Printed in three colors. Sample copies free. Put up in loose packages of fifty, .50. Price to Hospitals, 500 copies, \$4.00; 1000 copies, \$7.50. With name of Hospital printed on, .50 extra.
- KEEN'S CLINICAL CHARTS.** Seven Outline Drawings of the Body, on which may be marked the Course of Disease, Fractures, Operations, etc. Pads of fifty, \$1.00. Each Drawing may also be had separately, twenty-five to pad, 25 cents.

SCHREINER. Diet Lists. Arranged in the form of a chart. With Pamphlets of Specimen Dietaries. Pads of 50. .75

DENTISTRY.

Special Catalogue of Dental Books sent free upon application.

BARRETT. Dental Surgery for General Practitioners and Students of Medicine and Dentistry. Extraction of Teeth, etc. 3d Edition. Illustrated. *Nearly Ready.*

BLODGETT. Dental Pathology. By ALBERT N. BLODGETT, M.D., late Professor of Pathology and Therapeutics, Boston Dental College. 33 Illustrations. \$1.25

BROOMELL. Anatomy and Histology of the Human Mouth and Teeth. 284 Handsome Illustrations. \$4.50

FLAGG. Plastics and Plastic Filling, as Pertaining to the Filling of Cavities in Teeth of all Grades of Structure. 4th Edition. \$4.00

FILLEBROWN. A Text-Book of Operative Dentistry. Written by invitation of the National Association of Dental Faculties. Illustrated. \$2.25

GORGAS. Dental Medicine. A Manual of Materia Medica and Therapeutics. 6th Edition, Revised. Cloth, \$4.00; Sheep, \$5.00

HARRIS. Principles and Practice of Dentistry. Including Anatomy, Physiology, Pathology, Therapeutics, Dental Surgery, and Mechanism. 13th Edition. Revised by F. J. S. GORGAS, M.D., D.D.S. 1250 Illustrations. Cloth, \$6.00; Leather, \$7.00

HARRIS. Dictionary of Dentistry. Including Definitions of Such Words and Phrases of the Collateral Sciences as Pertain to the Art and Practice of Dentistry. 6th Edition. Revised and Enlarged by FERRIS and F. S. GORGAS, M.D., D.D.S. Cloth, \$5.00; Leather, \$6.00

HEATH. Injuries and Diseases of the Jaws. 4th Edition. 187 Illustrations. \$4.50

HEATH. Lectures on Certain Diseases of the Jaws. 64 Illustrations. Boards, .50

RICHARDSON. Mechanical Dentistry. 7th Edition. Thoroughly Revised and Enlarged by DR. GEO. W. WARREN. 691 Illustrations. Cloth, \$5.00; Leather, \$6.00

SEWELL. Dental Surgery. Including Special Anatomy and Surgery. 3d Edition, with 200 Illustrations. \$2.00

SMITH. Dental Metallurgy. Illustrated. \$1.75

TAFT. Index of Dental Periodical Literature. \$2.00

TALBOT. Irregularities of the Teeth and Their Treatment. 2d Edition. 234 Illustrations. \$3.00

TOMES. Dental Anatomy. Human and Comparative. 263 Illustrations. 5th Edition. \$4.00

TOMES. Dental Surgery. 4th Edition. 289 Illustrations. \$4.00

WARREN. Compend of Dental Pathology and Dental Medicine. With a Chapter on Emergencies. 3d Edition. Illustrated. .80; Interleaved, \$1.25

WARREN. Dental Prosthesis and Metallurgy. 129 Ills. \$1.25

WHITE. The Mouth and Teeth. Illustrated. .40

. *Special Catalogue of Dental Books free upon application.*

DICTIONARIES.

GOULD. The Illustrated Dictionary of Medicine, Biology, and Allied Sciences. Being an Exhaustive Lexicon of Medicine and those Sciences Collateral to it: Biology (Zoology and Botany), Chemistry, Dentistry, Pharmacology, Microscopy, etc., with many useful Tables and numerous fine Illustrations. 1633 pages. 4th Ed.

Sheep or Half Dark Green Leather, \$10.00; Thumb Index, \$11.00
Half Russia, Thumb Index, \$12.00

GOULD. The Medical Student's Dictionary. Including all the Words and Phrases Generally Used in Medicine, with their Proper Pronunciation and Definition, Based on Recent Medical Literature. With Tables of the Bacilli, Micrococci, Mineral Springs, etc., of the Arteries, Muscles, Nerves, Ganglia, and Plexuses, etc. 10th Edition. Rewritten and Enlarged. Completely reset from new type. 700 pp.

Half Dark Leather, \$3.25; Half Morocco, Thumb Index, \$4.00

GOULD. The Pocket Pronouncing Medical Lexicon. 3d Edition. (28,000 Medical Words Pronounced and Defined.) Containing all the Words, their Definition and Pronunciation, that the Medical, Dental, or Pharmaceutical Student Generally Comes in Contact With; also Elaborate Tables of the Arteries, Muscles, Nerves, Bacilli, etc., etc., a Dose List in both English and Metric Systems, etc., Arranged in a Most Convenient Form for Reference and Memorizing. A new Edition from new type, enlarged by 225 pages. *Just Ready.*

Full Limp Leather, Gilt Edges, \$1.00; Thumb Index, \$1.25

90,000 Copies of Gould's Dictionaries Have Been Sold.

*** Sample Pages and Illustrations and Descriptive Circulars of Gould's Dictionaries sent free upon application.

HARRIS. Dictionary of Dentistry. Including Definitions of Such Words and Phrases of the Collateral Sciences as Pertain to the Art and Practice of Dentistry. 6th Edition. Revised and Enlarged by FERDINAND J. S. GORGAS, M.D., D.D.S. Cloth, \$5.00; Leather, \$6.00

LONGLEY. Pocket Medical Dictionary. With an Appendix, containing Poisons and their Antidotes, Abbreviations used in Prescriptions, etc. Cloth, .75; Tucks and Pocket, \$1.00

MAXWELL. Terminologia Medica Polyglotta. By Dr. THEODORE MAXWELL, Assisted by Others. \$3.00

The object of this work is to assist the medical men of any nationality in reading medical literature written in a language not their own. Each term is usually given in seven languages, viz.: English, French, German, Italian, Spanish, Russian, and Latin.

TREVES AND LANG. German-English Medical Dictionary. Half Russia, \$3.25

EAR (see also Throat and Nose).

BURNETT. Hearing and How to Keep It. Illustrated. .40

DALBY. Diseases and Injuries of the Ear. 4th Edition. 38 Wood Engravings and 8 Colored Plates. \$2.50

HOVELL. Diseases of the Ear and Naso-Pharynx. Including Anatomy and Physiology of the Organ, together with the Treatment of the Affections of the Nose and Pharynx which Conduce to Aural Disease. 122 Illustrations. 2d Edition. *Preparing.*

PRITCHARD. Diseases of the Ear. 3d Edition, Enlarged. Many Illustrations and Formulæ. \$1.50

WOAKES. Deafness, Giddiness, and Noises in the Head. 4th Edition. Illustrated. \$2.00

ELECTRICITY.

- BIGELOW.** Plain Talks on Medical Electricity and Batteries. With a Therapeutic Index and a Glossary. 43 Illustrations. 2d Edition. \$1.00
- JONES.** Medical Electricity. 3d Edition. 112 Illus. *In Press.*
- MASON.** Electricity; Its Medical and Surgical Uses. Numerous Illustrations. .75

EYE.

- A Special Circular of Books on the Eye sent free upon application.*
- ARLT.** Diseases of the Eye. Clinical Studies on Diseases of the Eye. Translation by LYMAN WARE, M.D. Illustrated. \$1.25
- DONDERS.** The Nature and Consequences of Anomalies of Refraction. With Portrait and other Illustrations. 8vo. *Just Ready.* Half Morocco, \$1.25
- FICK.** Diseases of the Eye and Ophthalmoscopy. Translated by A. B. HALE, M. D. 157 Illustrations, many of which are in colors, and a glossary. Cloth, \$4.50; Sheep, \$5.50
- GOULD AND PYLE.** Compend of Diseases of the Eye and Refraction. Including Treatment and Operations, and a Section on Local Therapeutics. With Formulæ, Useful Tables, a Glossary, and 111 Illustrations, several of which are in colors. Cloth, 8o; Interleaved, \$1.25
- GOWERS.** Medical Ophthalmoscopy. A Manual and Atlas with Colored Autotype and Lithographic Plates and Wood-cuts, Comprising Original Illustrations of the Changes of the Eye in Diseases of the Brain, Kidney, etc. 3d Edition. \$4.00
- HARLAN.** Eyesight, and How to Care for It. Illus. .40
- HARTRIDGE.** Refraction. 104 Illustrations and Test Types. 9th Edition, Enlarged. \$1.50
- HARTRIDGE.** On the Ophthalmoscope. 3d Edition. With 4 Colored Plates and 68 Wood-cuts. \$1.50
- HANSELL AND REBER.** Muscular Anomalies of the Eye. Illustrated. *Just Ready.* \$1.50
- HANSELL AND BELL.** Clinical Ophthalmology. Colored Plate of Normal Fundus and 120 Illustrations. \$1.50
- JESSOP.** Manual of Ophthalmic Surgery and Medicine. Colored Plates and 108 other Illustrations. *Just Ready.* Cloth, \$3 00
- MORTON.** Refraction of the Eye. Its Diagnosis and the Correction of its Errors. With Chapter on Keratotomy and Test Types. 6th Edition. \$1.00
- OHLEMANN.** Ocular Therapeutics. Authorized Translation, and Edited by DR. CHARLES A. OLIVER. *Just Ready.* \$1.75
- PHILLIPS.** Spectacles and Eyeglasses. Their Prescription and Adjustment. 2d Edition. 49 Illustrations. \$1.00
- SWANZY.** Diseases of the Eye and Their Treatment. 6th Edition, Revised and Enlarged. 158 Illustrations, 1 Plain Plate, and a Zephyr Test Card. \$3.00
- THORINGTON.** Retinoscopy. 3d Edition. Illustrated. \$1.00
- THORINGTON.** Refraction and How to Refract. Illustrated. *In Press*
- WALKER.** Students' Aid in Ophthalmology. Colored Plate and 40 other Illustrations and Glossary. \$1.50

FEVERS.

- COLLIE.** On Fevers. Their History, Etiology, Diagnosis, Prognosis, and Treatment. Colored Plates. \$2.00
GOODALL AND WASHBOURN. Fevers and Their Treatment. Illustrated. \$3.00

GOUT AND RHEUMATISM.

- DUCKWORTH.** A Treatise on Gout. With Chromo-lithographs and Engravings. Cloth, \$6.00
GARROD. On Rheumatism. A Treatise on Rheumatism and Rheumatic Arthritis. Cloth, \$5.00
HAIG. Causation of Disease by Uric Acid. A Contribution to the Pathology of High Arterial Tension, Headache, Epilepsy, Gout, Rheumatism, Diabetes, Bright's Disease, etc. 4th Edition. \$3.00

HEALTH AND DOMESTIC MEDICINE (see also Hygiene and Nursing).

- BUCKLEY.** The Skin in Health and Disease. Illus. .40
BURNETT. Hearing and How to Keep It. Illustrated. .40
COHEN. The Throat and Voice. Illustrated. .40
DULLES. Emergencies. 4th Edition. Illustrated. \$1.00
HARLAN. Eyesight and How to Care for It. Illustrated. .40
HARTSHORNE. Our Homes. Illustrated. .40
OSGOOD. The Winter and its Dangers. .40
PACKARD. Sea Air and Bathing. .40
PARKES. The Elements of Health. * \$1.25
RICHARDSON. Long Life and How to Reach It. .40
WESTLAND. The Wife and Mother. \$1.50
WHITE. The Mouth and Teeth. Illustrated. .40
WILSON. The Summer and its Diseases. .40
WOOD. Brain Work and Overwork. .40
STARR. Hygiene of the Nursery. 5th Edition. \$1.00
CANFIELD. Hygiene of the Sick-Room. \$1.25

HEART.

- SANSOM.** Diseases of the Heart. The Diagnosis and Pathology of Diseases of the Heart and Thoracic Aorta. With Plates and other Illustrations. \$6.00

HISTOLOGY.

- STIRLING.** Outlines of Practical Histology. 368 Illustrations. 2d Edition, Revised and Enlarged. With new Illustrations. \$2.00
STÖHR. Histology and Microscopical Anatomy. Translated and Edited by A. SCHAPER, M.D., Harvard Medical School. Second Edition, Revised and Enlarged. 292 Illustrations. \$3.00

HYGIENE AND WATER ANALYSIS.

Special Catalogue of Books on Hygiene sent free upon application.

- CANFIELD.** Hygiene of the Sick-Room. A Book for Nurses and Others. Being a Brief Consideration of Asepsis, Antisepsis, Disinfection, Bacteriology, Immunity, Heating, Ventilation, etc. \$1.25
- COPLIN AND BEVAN.** Practical Hygiene. A Complete American Text-Book. 138 Illustrations. New Ed. *Preparing.*
- KENWOOD.** Public Health Laboratory Work. 116 Illustrations and 3 Plates. \$2.00
- LEFFMANN.** Examination of Water for Sanitary and Technical Purposes. 4th Edition. Illustrated. *Just Ready.* \$1.25
- LEFFMANN.** Analysis of Milk and Milk Products. Illustrated. Second Edition. \$1.25
- LINCOLN.** School and Industrial Hygiene. .40
- MACDONALD.** Microscopical Examinations of Water and Air. 25 Lithographic Plates, Reference Tables, etc. 2d Ed. \$2.50
- McNEILL.** The Prevention of Epidemics and the Construction and Management of Isolation Hospitals. Numerous Plans and Illustrations. \$3.50
- NOTTER AND FIRTH.** The Theory and Practice of Hygiene. (Being the 9th Edition of Parkes' Practical Hygiene, rewritten and brought up to date.) 10 Plates and 135 other Illustrations. 1034 pages. 8vo. \$7.00
- PARKES.** Hygiene and Public Health. By Louis C. Parkes, M.D. 5th Edition. Enlarged. Illustrated. \$2.50
- PARKES.** Popular Hygiene. The Elements of Health. A Book for Lay Readers. Illustrated. \$1.25
- STARR.** The Hygiene of the Nursery. Including the General Regimen and Feeding of Infants and Children, and the Domestic Management of the Ordinary Emergencies of Early Life, Massage, etc. 6th Edition. 25 Illustrations. \$1.00
- STEVENSON AND MURPHY.** A Treatise on Hygiene. By Various Authors. In Three Octave Volumes. Illustrated. Vol. I, \$6.00; Vol. II, \$6.00; Vol. III, \$5.00

* * Each Volume sold separately. Special Circular upon application.

- WILSON.** Hand-Book of Hygiene and Sanitary Science. With Illustrations. 8th Edition. \$3.00
- WEYL.** Sanitary Relations of the Coal-Tar Colors. Authorized Translation by HENRY LEFFMANN, M.D., PH.D. \$1.25

* * *Special Catalogue of Books on Hygiene free upon application.*

LUNGS AND PLEURÆ.

- HARRIS AND BEALE.** Treatment of Pulmonary Consumption. \$2.50
- KNOFF.** Pulmonary Tuberculosis. Its Modern Prophylaxis and Treatment in Special Institutions and at Home. Illus. \$3.00
- POWELL.** Diseases of the Lungs and Pleuræ, including Consumption. Colored Plates and other Illus. 4th Ed. \$4.00
- TUSSEY.** High Altitudes in the Treatment of Consumption. \$1.50

MASSAGE.

- KLEEN.** *Hand-Book of Massage.* Authorized translation by MUSSEY HARTWELL, M.D., PH.D. With an Introduction by Dr. S. WEIR MITCHELL. Illustrated by a series of Photographs Made Especially by DR. KLEEN for the American Edition. \$2.25
- MURRELL.** *Massotherapeutics.* Massage as a Mode of Treatment. 6th Edition. *In Press.*
- OSTROM.** *Massage and the Original Swedish Movements.* Their Application to Various Diseases of the Body. A Manual for Students, Nurses, and Physicians. Fourth Edition, Enlarged. 105 Illustrations, many of which are original. \$1.00
- WARD.** *Notes on Massage.* Interleaved. Paper cover, \$1.00

MATERIA MEDICA AND THERAPEUTICS.

- ALLEN, HARLAN, HARTE, VAN HARLINGEN.** *A Hand-Book of Local Therapeutics,* Being a Practical Description of all those Agents Used in the Local Treatment of Diseases of the Eye, Ear, Nose and Throat, Mouth, Skin, Vagina, Rectum, etc., such as Ointments, Plasters, Powders, Lotions, Inhalations, Suppositories, Bougies, Tampons, and the Proper Methods of Preparing and Applying Them. Cloth, \$3.00; Sheep, \$4.00
- BIDDLE.** *Materia Medica and Therapeutics.* Including Dose List, Dietary for the Sick, Table of Parasites, and Memoranda of New Remedies. 13th Edition, Thoroughly Revised in accordance with the new U. S. P. 64 Illustrations and a Clinical Index. Cloth, \$4.00; Sheep, \$5.00
- BRACKEN.** *Outlines of Materia Medica and Pharmacology.* \$2.75
- COBLENTZ.** *The Newer Remedies.* 3d Edition, Enlarged and Revised. *Just Ready.* \$1.00
- DAVIS.** *Materia Medica and Prescription Writing.* \$1.50
- FIELD.** *Evacuant Medication.* Cathartics and Emetics. \$1.75
- GORGAS.** *Dental Medicine.* A Manual of Materia Medica and Therapeutics. 6th Edition, Revised. \$4.00
- GROFF.** *Materia Medica for Nurses.* \$1.25
- HELLER.** *Essentials of Materia Medica, Pharmacy, and Prescription Writing.* \$1.50
- MAYS.** *Theine in the Treatment of Neuralgia.* ½ bound, .50
- NAPHEYS.** *Modern Therapeutics.* 9th Revised Edition, Enlarged and Improved. In two handsome volumes. Edited by ALLEN J. SMITH, M.D., and J. AUBREY DAVIS, M.D.
Vol. I. General Medicine and Diseases of Children. \$4.00
Vol. II. General Surgery, Obstetrics, and Diseases of Women. \$4.00
- POTTER.** *Hand-Book of Materia Medica, Pharmacy, and Therapeutics,* including the Action of Medicines, Special Therapeutics, Pharmacology, etc., including over 600 Prescriptions and Formulæ. 7th Edition, Revised and Enlarged. With Thumb Index in each copy. *Just Ready.* Cloth, \$5.00; Sheep, \$6.00
- POTTER.** *Compend of Materia Medica, Therapeutics, and Prescription Writing,* with Special Reference to the Physiological Action of Drugs. 6th Revised and Improved Edition, based upon the U. S. P. 1890. .80; Interleaved, \$1.25

- SAYRE.** Organic Materia Medica and Pharmacognosy. An Introduction to the Study of the Vegetable Kingdom and the Vegetable and Animal Drugs. Comprising the Botanical and Physical Characteristics, Source, Constituents, and Pharmacopeial Preparations. With chapters on Synthetic Organic Remedies, Insects Injurious to Drugs, and Pharmacal Botany. A Glossary and 543 Illustrations, many of which are original. 2d Edition. *In Press.*
- WARING.** Practical Therapeutics. 4th Edition, Revised and Rearranged. Cloth, \$2.00; Leather, \$3.00
- WHITE AND WILCOX.** Materia Medica, Pharmacy, Pharmacology, and Therapeutics. 4th American Edition, Revised by REYNOLD W. WILCOX, M.A., M.D., LL.D. Clo., \$3.00; Lea., \$3.50

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

- REESE.** Medical Jurisprudence and Toxicology. A Text-Book for Medical and Legal Practitioners and Students. 5th Edition. Revised by HENRY LEFFMANN, M.D. Clo., \$3.00; Leather, \$3.50
- "To the student of medical jurisprudence and toxicology it is invaluable, as it is concise, clear, and thorough in every respect."—*The American Journal of the Medical Sciences.*
- MANN.** Forensic Medicine and Toxicology. Illus. \$6.50
- MURRELL.** What to Do in Cases of Poisoning. 8th Edition, Enlarged. \$1.00
- TANNER.** Memoranda of Poisons. Their Antidotes and Tests. 7th Edition. .75

MICROSCOPY.

- BEALE.** The Use of the Microscope in Practical Medicine. For Students and Practitioners, with Full Directions for Examining the Various Secretions, etc., by the Microscope. 4th Ed. 500 Illus. \$6.50
- BEALE.** How to Work with the Microscope. A Complete Manual of Microscopical Manipulation, containing a Full Description of many New Processes of Investigation, with Directions for Examining Objects Under the Highest Powers, and for Taking Photographs of Microscopic Objects. 5th Edition. 400 Illustrations, many of them colored. \$6.50
- CARPENTER.** The Microscope and Its Revelations. 8th Edition. 800 Illustrations and many Lithographs. *Preparing.*
- LEE.** The Microtome's Vade Mecum. A Hand-Book of Methods of Microscopical Anatomy. 887 Articles. 4th Edition, Enlarged. \$4.00
- REEVES.** Medical Microscopy, including Chapters on Bacteriology, Neoplasms, Urinary Examination, etc. Numerous Illustrations, some of which are printed in colors. \$2.50
- WETHERED.** Medical Microscopy. A Guide to the Use of the Microscope in Practical Medicine. 100 Illustrations. \$2.00

MISCELLANEOUS.

- BLACK.** Micro-Organisms. The Formation of Poisons. A Biological Study of the Germ Theory of Disease. .75
- BRAMWELL.** Anæmia. *Just Ready.* \$2.50
- BURNETT.** Foods and Dietaries. A Manual of Clinical Dietetics. 2d Edition. \$1.50
- BUXTON.** Anæsthetics. Illustrated. 3d Edition. *In Press.*
- GOULD.** Borderland Studies. Miscellaneous Addresses and Essays. 12mo. \$2.00
- GOWERS.** The Dynamics of Life. .75
- HAIG.** Causation of Disease by Uric Acid. A Contribution to the Pathology of High Arterial Tension, Headache, Epilepsy, Gout, Rheumatism, Diabetes, Bright's Disease, etc. 4th Edition. \$3.00
- HAIG.** Diet and Food. Considered in Relation to Strength and Power of Endurance. *Just Ready.* \$1.00
- HARE.** Mediastinal Disease. Illustrated by six Plates. \$2.00
- HEMMETER.** Diseases of the Stomach. Their Special Pathology, Diagnosis, and Treatment. With Sections on Anatomy, Dietetics, Surgery, etc. Illustrated. Clo. \$6.00; Sh. \$7.00
- HENRY.** A Practical Treatise on Anemia. Half Cloth, .50
- LEFFMANN.** The Coal-Tar Colors. With Special Reference to their Injurious Qualities and the Restrictions of their Use. A Translation of THEODORE WEYL's Monograph. \$1.25
- MARSHALL.** History of Woman's Medical College of Pennsylvania. \$1.50
- NEW SYDENHAM SOCIETY'S PUBLICATIONS.** Circulars upon application. Per Annum, \$8.00
- TREVES.** Physical Education: Its Effects, Methods, Etc. .75
- LIZARS.** The Use and Abuse of Tobacco. .40
- PARRISH.** Alcoholic Inebriety. \$1.00
- ST. CLAIR.** Medical Latin. \$1.00
- SCHREINER.** Diet Lists. Pads of 50. .75
- TURNBULL.** Artificial Anæsthesia. 4th Edition. Illus. \$2.50

NERVOUS DISEASES.

- BEEVOR.** Diseases of the Nervous System and their Treatment. \$2.50
- GORDINIER.** The Gross and Minute Anatomy of the Central Nervous System. With 271 original Colored and other Illustrations. *Just Ready.* Cloth, \$6.00; Sheep, \$7.00
- GOWERS.** Manual of Diseases of the Nervous System. A Complete Text-Book. Revised, Enlarged, and in many parts Rewritten. With many new Illustrations. Two volumes.
Vol. I. Diseases of the Nerves and Spinal Cord. 3d Edition, Enlarged. *Just Ready.* Cloth, \$4.00; Sheep, \$5.00
Vol. II. Diseases of the Brain and Cranial Nerves; General and Functional Disease. 2d Edition. Cloth, \$4.00; Sheep, \$5.00
- GOWERS.** Syphilis and the Nervous System. \$1.00
- GOWERS.** Diagnosis of Diseases of the Brain. 2d Edition. Illustrated. \$1.50
- GOWERS.** Clinical Lectures. A New Volume of Essays on the Diagnosis, Treatment, etc., of Diseases of the Nervous System. \$2.00
- GOWERS.** Epilepsy and Other Chronic Convulsive Diseases. 2d Edition. *In Press.*

- HORSLEY.** The Brain and Spinal Cord. The Structure and Functions of. Numerous Illustrations. \$2.50
- ORMEROD.** Diseases of the Nervous System. 66 Wood Engravings. \$1.00
- OSLER.** Cerebral Palsies of Children. A Clinical Study. \$2.00
- OSLER.** Chorea and Choreiform Affections. \$2.00
- PRESTON.** Hysteria and Certain Allied Conditions. Their Nature and Treatment. Illustrated. \$2.00
- WATSON.** Concussions. An Experimental Study of Lesions Arising from Severe Concussions. Paper cover, \$1.00
- WOOD.** Brain Work and Overwork. .40

NURSING.

Special Catalogue of Books for Nurses sent free upon application.

- BROWN.** Elementary Physiology for Nurses. .75
- CANFIELD.** Hygiene of the Sick-Room. A Book for Nurses and Others. Being a Brief Consideration of Asepsis, Antisepsis, Disinfection, Bacteriology, Immunity, Heating and Ventilation, and Kindred Subjects for the Use of Nurses and Other Intelligent Women. \$1.25
- CULLINGWORTH.** A Manual of Nursing, Medical and Surgical. 3d Edition with Illustrations. .75
- CULLINGWORTH.** A Manual for Monthly Nurses. 3d Ed. .40
- CUFF.** Lectures to Nurses on Medicine. New Ed. \$1.25
- DOMVILLE.** Manual for Nurses and Others Engaged in Attending the Sick. 8th Edition. With Recipes for Sick-room Cookery, etc. .75
- FULLERTON.** Obstetric Nursing. 41 Ills. 5th Ed. \$1.00
- FULLERTON.** Surgical Nursing. Comprising the Regular Course of Instruction at the Training-School of the Woman's Hospital, Philadelphia. 3d Edition. 63 Illustrations. \$1.00
- GROFF.** Materia Medica for Nurses. With Questions for Self-Examination and a very complete Glossary. \$1.25
- HUMPHREY.** A Manual for Nurses. Including General Anatomy and Physiology, Management of the Sick Room, etc. 16th Ed. Illustrated. \$1.00
- SHAW.** Notes for Visiting Nurses, and all those Interested in the Working and Organization of District, Visiting, or Parochial Nurse Societies. With an Appendix Explaining the Organization and Working of Various Visiting and District Nurse Societies, by HELEN C. JENKS, of Philadelphia. \$1.00
- STARR.** The Hygiene of the Nursery. Including the General Regimen and Feeding of Infants and Children, and the Domestic Management of the Ordinary Emergencies of Early Life, Massage, etc. 6th Edition. 25 Illustrations. \$1.00
- TEMPERATURE AND CLINICAL CHARTS.** See page 6.
- VOSWINKEL.** Surgical Nursing. Second Edition, Enlarged. 112 Illustrations. *Just Ready.* \$1.00
- WARD.** Notes on Massage. Interleaved. Paper cover, \$1.00

OBSTETRICS.

- BAR.** Antiseptic Midwifery. The Principles of Antiseptic Methods Applied to Obstetric Practice. Authorized Translation by HENRY D. FRY, M.D., with an Appendix by the Author. \$1.00

- CAZEAX AND TARNIER.** Midwifery. With Appendix by MUNDÉ. The Theory and Practice of Obstetrics, including the Diseases of Pregnancy and Parturition, Obstetrical Operations, etc. 8th Edition. Illustrated by Chromo-Lithographs, Lithographs, and other full-page Plates, seven of which are beautifully colored, and numerous Wood Engravings. Cloth, \$4.50; Full Leather, \$5.50
- DAVIS.** A Manual of Obstetrics. Being a Complete Manual for Physicians and Students. 3d Enlarged and Revised Edition. With Colored and many other Illustrations. *In Press.*
- LANDIS.** Compend of Obstetrics. 6th Edition, Revised by WM. H. WELLS, Assistant Demonstrator of Clinical Obstetrics, Jefferson Medical College. With 47 Illustrations, .80; Interleaved, \$1.25.
- SCHULTZE.** Obstetrical Diagrams. Being a series of 20 Colored Lithograph Charts, Imperial Map Size, of Pregnancy and Midwifery, with accompanying explanatory (German) text illustrated by Wood Cuts. 2d Revised Edition. Price in Sheets, \$26.00; Mounted on Rollers, Muslin Backs, \$36.00
- STRAHAN.** Extra-Uterine Pregnancy. The Diagnosis and Treatment of Extra-Uterine Pregnancy. .75
- WINCKEL.** Text-Book of Obstetrics, Including the Pathology and Therapeutics of the Puerperal State. Authorized Translation by J. CLIFTON EDGAR, A.M., M.D. With nearly 200 Illustrations. Cloth, \$5.00; Leather, \$6.00
- FULLERTON.** Obstetric Nursing. 5th Ed. Illustrated. \$1.00

PATHOLOGY.

- BARLOW.** General Pathology. 795 pages. 8vo. \$5.00
- BLACKBURN.** Autopsies. A Manual of Autopsies Designed for the Use of Hospitals for the Insane and other Public Institutions. Ten full-page Plates and other Illustrations. \$1.25
- BLODGETT.** Dental Pathology. By ALBERT N. BLODGETT, M.D., late Professor of Pathology and Therapeutics, Boston Dental College. 33 Illustrations. \$1.25
- COPLIN.** Manual of Pathology. Including Bacteriology, Technic of Post-Mortems, Methods of Pathologic Research, etc. 275 Illustrations, many of which are original. 3d. Edition. *Nearly Ready.*
- GILLIAM.** Pathology. A Hand-Book for Students. 47 Illus. .75
- HALL.** Compend of General Pathology and Morbid Anatomy. 91 very fine Illustrations. 2d Edition. .80; Interleaved, \$1.25
- HEWLETT.** Manual of Bacteriology. 75 Illustrations. \$3.00
- VIRCHOW.** Post-Mortem Examinations. A Description and Explanation of the Method of Performing Them in the Dead House of the Berlin Charity Hospital, with Special Reference to Medicolegal Practice. 3d Edition, with Additions. .75
- WHITACRE.** Laboratory Text-Book of Pathology. With 121 Illustrations. \$1.50
- WILLIAMS.** Bacteriology. A Manual for Students. 78 Illustrations. \$1.50

PHARMACY.

Special Catalogue of Books on Pharmacy sent free upon application.

- COBLENTZ.** The Newer Remedies. Including their Synonyms, Sources, Methods of Preparation, Tests, Solubilities, and Doses as far as known. Together with Sections on the Organo-Therapeutic Agents and Indifferent Compounds of Iron. Third Edition, very much Enlarged. *Just Ready.* \$1.00
- COBLENTZ.** Manual of Pharmacy. A New and Complete Text-Book by the Professor in the New York College of Pharmacy. 2d Edition, Revised and Enlarged. 437 Illus. Cloth, \$3.50; Sh., \$4.50

- BEASLEY.** *Book of 3100 Prescriptions.* Collected from the Practice of the Most Eminent Physicians and Surgeons—English, French, and American. A Compendious History of the *Materia Medica*, Lists of the Doses of all the Official and Established Preparations, an Index of Diseases and their Remedies. 7th Ed. \$2.00
- BEASLEY.** *Druggists' General Receipt Book.* Comprising a Copious Veterinary Formulary, Recipes in Patent and Proprietary Medicines, Druggists' Nostrums, etc.; Perfumery and Cosmetics, Beverages, Dietetic Articles and Condiments, Trade Chemicals, Scientific Processes, and many Useful Tables. 10th Ed. \$2.00
- BEASLEY.** *Pharmaceutical Formulary.* A Synopsis of the British, French, German, and United States Pharmacopœias. Comparing Standard and Approved Formulæ for the Preparations and Compounds Employed in Medicine. 12th Edition. *Just Ready.* \$2.00
- PROCTOR.** *Practical Pharmacy.* Lectures on Practical Pharmacy. With Wood Engravings and 32 Lithographic Fac-simile Prescriptions. 3d Edition, Revised, and with Elaborate Tables of Chemical Solubilities, etc. \$3.00
- ROBINSON.** *Latin Grammar of Pharmacy and Medicine.* 3d Edition. With elaborate Vocabularies. \$1.75
- SAYRE.** *Organic Materia Medica and Pharmacognosy.* An Introduction to the Study of the Vegetable Kingdom and the Vegetable and Animal Drugs. Comprising the Botanical and Physical Characteristics, Source, Constituents, and Pharmacopœial Preparations. With Chapters on Synthetic Organic Remedies, Insects Injurious to Drugs, and Pharmacal Botany. A Glossary and 543 Illustrations. Second Edition. *In Press.*
- SCOVILLE.** *The Art of Compounding.* Second Edition, Revised and Enlarged. Cloth, \$2.50; Sheep, \$3.50
- STEWART.** *Compend of Pharmacy.* Based upon "Remington's Text-Book of Pharmacy." 5th Edition, Revised in Accordance with the U. S. Pharmacopœia, 1890. Complete Tables of Metric and English Weights and Measures. .80; Interleaved, \$1.25
- UNITED STATES PHARMACOPŒIA.** 1890. 7th Decennial Revision. Cloth, \$2.50 (postpaid, \$2.77); Sheep, \$3.00 (postpaid, \$3.27); Interleaved, \$4.00 (postpaid, \$4.50); Printed on one side of page only, unbound, \$3.50 (postpaid, \$3.90).
- Select Tables from the U. S. P. (1890).* Being Nine of the Most Important and Useful Tables, Printed on Separate Sheets. Carefully put up in patent envelope. .25
- POTTER.** *Hand-Book of Materia Medica, Pharmacy, and Therapeutics.* 600 Prescriptions. 7th Ed. Clo., \$5.00; Sh., \$6.00
- * * *Special Catalogue of Books on Pharmacy free upon application.*

PHYSICAL DIAGNOSIS.

- BROWN.** *Medical Diagnosis.* A Manual of Clinical Methods. 4th Edition. 112 Illustrations. Cloth, \$2.25
- FENWICK.** *Medical Diagnosis.* 8th Edition. Rewritten and very much Enlarged. 135 Illustrations. Cloth, \$2.50
- MEMMINGER.** *Diagnosis by the Urine.* 2d Ed. 24 Illus. \$1 00
- TYSON.** *Hand-Book of Physical Diagnosis.* For Students and Physicians. By the Professor of Clinical Medicine in the University of Pennsylvania. Illus. 3d Ed., Improved and Enlarged. With Colored and other Illustrations. \$1.50

PHYSIOLOGY.

- BIRCH.** Practical Physiology. An Elementary Class Book. 62 Illustrations. *Just Ready.* \$1.75
- BRUBAKER.** Compend of Physiology. 9th Edition, Revised and Enlarged. Illustrated. *Just Ready.* .80; Interleaved, \$1.25
- KIRKE.** Physiology. (15th Authorized Edition. Dark-Red Cloth.) A Hand-Book of Physiology. 15th Edition, Revised, Rearranged, and Enlarged. By PROF. W. D. HALLIBURTON, of Kings College, London. 661 Illustrations, some of which are printed in colors. *Just Ready.* Cloth, \$3.00; Leather, \$3.75
- LANDOIS.** A Text-Book of Human Physiology, Including Histology and Microscopical Anatomy, with Special Reference to the Requirements of Practical Medicine. 5th American, translated from the 9th German Edition, with Additions by WM. STIRLING, M.D., D.SC. 845 Illus., many of which are printed in colors. *In Press.*
- STARLING.** Elements of Human Physiology. 100 Ills. \$1.00
- STIRLING.** Outlines of Practical Physiology. Including Chemical and Experimental Physiology, with Special Reference to Practical Medicine. 3d Edition. 289 Illustrations. \$2.00
- TYSON.** Cell Doctrine. Its History and Present State. \$1.50

PRACTICE.

- BEALE.** On Slight Ailments; their Nature and Treatment. 2d Edition, Enlarged and Illustrated. \$1.25
- FOWLER.** Dictionary of Practical Medicine. By various writers. An Encyclopædia of Medicine. Clo., \$3.00; Half Mor. \$4.00
- HUGHES.** Compend of the Practice of Medicine. 6th Edition, Revised and Enlarged. *Just Ready.*
- Part I. Continued, Eruptive, and Periodical Fevers, Diseases of the Stomach, Intestines, Peritoneum, Biliary Passages, Liver, Kidneys, etc., and General Diseases, etc.
- Part II. Diseases of the Respiratory System, Circulatory System, and Nervous System; Diseases of the Blood, etc.
- Price of each part, .80; Interleaved, \$1.25
- Physician's Edition.** In one volume, including the above two parts, a Section on Skin Diseases, and an Index. 6th Revised, Enlarged Edition. 575 pp. Full Morocco, Gilt Edge, \$2.25
- ROBERTS.** The Theory and Practice of Medicine. The Sections on Treatment are especially exhaustive. 9th Edition, with Illustrations. Cloth, \$4.50; Leather, \$5.50
- TAYLOR.** Practice of Medicine. 5th Edition. Cloth, \$4.00
- TYSON.** The Practice of Medicine. By JAMES TYSON, M.D., Professor of Clinical Medicine in the University of Pennsylvania. A Complete Systematic Text-book with Special Reference to Diagnosis and Treatment. Illustrated. 8vo. Cloth, \$5.50; Leather, \$6.50; Half Russia, \$7.50

PRESCRIPTION BOOKS.

- BEASLEY.** Book of 3100 Prescriptions. Collected from the Practice of the Most Eminent Physicians and Surgeons—English, French, and American. A Compendious History of the Materia Medica, Lists of the Doses of all Official and Established Preparations, and an Index of Diseases and their Remedies. 7th Ed. \$2.00

BEASLEY. *Druggists' General Receipt Book.* Comprising a Copious Veterinary Formulary, Recipes in Patent and Proprietary Medicines, Druggists' Nostrums, etc.; Perfumery and Cosmetics, Beverages, Dietetic Articles and Condiments, Trade Chemicals, Scientific Processes, and an Appendix of Useful Tables. 10th Edition, Revised. \$2.00

BEASLEY. *Pocket Formulary.* A Synopsis of the British, French, German, and United States Pharmacopœias and the chief unofficial Formularies. 12th Edition. *Just Ready.* \$2.00

SKIN.

BULKLEY. *The Skin in Health and Disease.* Illustrated. .40

CROCKER. *Diseases of the Skin.* Their Description, Pathology, Diagnosis, and Treatment, with Special Reference to the Skin Eruptions of Children. 92 Illus. 3d Edition. *Preparing.*

IMPEY. *Leprosy.* 37 Plates. 8vo. \$3.50

SCHAMBERG. *Diseases of the Skin.* 99 Illustrations. Being No. 16? Quiz-Compend? Series. Cloth, .80; Interleaved, \$1.25

VAN HARLINGEN. *On Skin Diseases.* A Practical Manual of Diagnosis and Treatment, with special reference to Differential Diagnosis. 3d Edition, Revised and Enlarged. With Formulæ and 60 Illustrations, some of which are printed in colors. \$2.75

SURGERY AND SURGICAL DISEASES (see also Urinary Organs).

CRIPPS. *Ovariectomy and Abdominal Surgery.* Illus. \$8.00

DEAVER. *Surgical Anatomy.* A Treatise on Human Anatomy in its Application to Medicine and Surgery. With about 400 very Handsome full-page Illustrations Engraved from Original Drawings made by special Artists from Dissections prepared for the purpose. Three Volumes. Royal Square Octavo. Volume I, *Just Ready.* Cloth, \$21.00; Half Morocco or Sheep, \$24.00; Half Russia, \$27.00

DEAVER. *Appendicitis, Its Symptoms, Diagnosis, Pathology, Treatment, and Complications.* Elaborately Illustrated with Colored Plates and other Illustrations. Cloth, \$3.50

DULLES. *What to Do First in Accidents and Poisoning.* 5th Edition. New Illustrations. \$1.00

HACKER. *Antiseptic Treatment of Wounds, According to the Method in Use at Professor Billroth's Clinic, Vienna.* .50

HAMILTON. *Lectures on Tumors, from a Clinical Standpoint.* Third Edition, Revised, with New Illustrations. \$1.25

HEATH. *Minor Surgery and Bandaging.* 10th Ed., Revised and Enlarged. 158 Illustrations, 62 Formulæ, Diet List, etc. \$1.25

HEATH. *Injuries and Diseases of the Jaws.* 4th Edition. 187 Illustrations. \$4.50

HEATH. *Lectures on Certain Diseases of the Jaws.* 64 Illustrations. Boards, .50

HORWITZ. *Compend of Surgery and Bandaging, including Minor Surgery, Amputations, Fractures, Dislocations, Surgical Diseases, and the Latest Antiseptic Rules, etc., with Differential Diagnosis and Treatment.* 5th Edition, very much Enlarged and Rearranged. 167 Illustrations, 98 Formulæ. Clo., .80; Interleaved, \$1.25

- JACOBSON.** Operations of Surgery. (Over 200 Illustrations. Cloth, \$3.00; Leather, \$4.00)
- JACOBSON.** Diseases of the Male Organs of Generation. 88 Illustrations. \$6.00
- LANE.** Surgery of the Head and Neck. 110 Illustrations. 2d Edition. *Just Ready.* \$5.00
- MACREADY.** A Treatise on Ruptures. 24 Full-page Lithographed Plates and Numerous Wood Engravings. Cloth, \$6.00
- MAYLARD.** Surgery of the Alimentary Canal. 134 Illus. \$7.50
- MOULLIN.** Text-Book of Surgery. With Special Reference to Treatment. 3d American Edition. Revised and edited by JOHN B. HAMILTON, M.D., LL.D., Professor of the Principles of Surgery and Clinical Surgery, Rush Medical College, Chicago. 623 Illustrations, over 200 of which are original, and many of which are printed in colors. Handsome Cloth, \$6.00; Leather, \$7.00
- "The aim to make this valuable treatise practical by giving special attention to questions of treatment has been admirably carried out. Many a reader will consult the work with a feeling of satisfaction that his wants have been understood, and that they have been intelligently met."—*The American Journal of Medical Science.*
- ROBERTS.** Fractures of the Radius. A Clinical and Pathological Study. 33 Illustrations. \$1.00
- SMITH.** Abdominal Surgery. Being a Systematic Description of all the Principal Operations. 224 Illus. 6th Ed. 2 Vols. Clo., \$10.00
- SWAIN.** Surgical Emergencies. Fifth Edition. Cloth, \$1.75
- VOSWINKEL.** Surgical Nursing. Second Edition, Revised and Enlarged. 111 Illustrations. *Just Ready.* \$1.00
- WALSHAM.** Manual of Practical Surgery. 6th Ed., Revised and Enlarged. With 410 Engravings. \$3.00
- WATSON.** On Amputations of the Extremities and Their Complications. 250 Illustrations. \$5.50

THROAT AND NOSE (see also Ear).

- COHEN.** The Throat and Voice. Illustrated. .40
- HALL.** Diseases of the Nose and Throat. Two Colored Plates and 59 Illustrations. \$2.50
- HOLLOPETER.** Hay Fever. Its Successful Treatment. \$1.00
- HUTCHINSON.** The Nose and Throat. Including the Nose, Naso-Pharynx, Pharynx, and Larynx. Illustrated by Lithograph Plates and 40 other Illustrations. 2d Edition. *In Press.*
- MACKENZIE.** Pharmacopœia of the London Hospital for Dis. of the Throat. 5th Ed., Revised by Dr. F. G. HARVEY. \$1.00
- McBRIDE.** Diseases of the Throat, Nose, and Ear. A Clinical Manual. With colored Illus. from original drawings. 2d Ed. \$6.00
- POTTER.** Speech and its Defects. Considered Physiologically, Pathologically, and Remedially. \$1.00

URINE AND URINARY ORGANS.

- ACTON.** The Functions and Disorders of the Reproductive Organs in Childhood, Youth, Adult Age, and Advanced Life, Considered in their Physiological, Social, and Moral Relations. 8th Edition. \$1.75

- ALLEN. Albuminous and Diabetic Urine. Illus. \$2.25
- BEALE. One Hundred Urinary Deposits. On eight sheets, for the Hospital, Laboratory, or Surgery. Paper, \$2.00
- HOLLAND. The Urine, the Gastric Contents, the Common Poisons, and the Milk. Memoranda, Chemical and Microscopical, for Laboratory Use. Illustrated and Interleaved. 5th Ed. \$1.00
- JACOBSON. Diseases of the Male Organs of Generation. 88 Illustrations \$6.00
- MEMMINGER. Diagnosis by the Urine. 2d Ed. 24 Illus. \$1.00
- MORRIS. Renal Surgery, with Special Reference to Stone in the Kidney and Ureter and to the Surgical Treatment of Calculous Anuria. Illustrated. \$2.00
- MOULLIN. Enlargement of the Prostate. Its Treatment and Radical Cure. 2d Edition. Illustrated. *In Press.*
- MOULLIN. Inflammation of the Bladder and Urinary Fever. Octavo. *Just Ready.* \$1.50
- THOMPSON. Diseases of the Urinary Organs. 8th Ed. \$3.00
- TYSON. Guide to Examination of the Urine. For the Use of Physicians and Students. With Colored Plate and Numerous Illustrations engraved on wood. 9th Edition, Revised. \$1.25
- VAN NUYS. Chemical Analysis of Healthy and Diseased Urine, Qualitative and Quantitative. 39 Illustrations. \$1.00

VENEREAL DISEASES.

- COOPER. Syphilis. 2d Edition, Enlarged and Illustrated with 20 full-page Plates. \$5.00
- GOWERS. Syphilis and the Nervous System. 1.00

VETERINARY.

- ARMATAGE. The Veterinarian's Pocket Remembrancer. Being Concise Directions for the Treatment of Urgent or Rare Cases, Embracing Semeiology, Diagnosis, Prognosis, Surgery, Treatment, etc. 2d Edition. Boards, \$1.00
- BALLOU. Veterinary Anatomy and Physiology. 29 Graphic Illustrations. .80; Interleaved, \$1.25
- TUSON. Veterinary Pharmacopœia. Including the Outlines of Materia Medica and Therapeutics. 5th Edition. \$2.25

WOMEN, DISEASES OF.

- BYFORD (H. T.). Manual of Gynecology. Second Edition, Revised and Enlarged by 100 pages. With 341 Illustrations, many of which are from original drawings. \$3.00
- BYFORD (W. H.). Diseases of Women. 4th Edition. 306 Illustrations. Cloth, \$2.00
- DÜHRSEN. A Manual of Gynecological Practice. 105 Illustrations. \$1.50
- LEWERS. Diseases of Women. 146 Illus. 5th Ed. \$2.50
- WELLS. Compend of Gynecology. Illustrated. .80; Interleaved, \$1.25
- FULLERTON. Nursing in Abdominal Surgery and Diseases of Women 2d Edition. 70 Illustrations. \$1.50

COMPENDS.

From The Southern Clinic.

"We know of no series of books issued by any house that so fully meets our approval as these ?Quiz-Compend??. They are well arranged, full, and concise, and are really the best line of text-books that could be found for either student or practitioner."

BLAKISTON'S ?QUIZ-COMPENDS?

The Best Series of Manuals for the Use of Students.

Price of each, Cloth, .80. Interleaved, for taking Notes, \$1.25.

☞ These Compends are based on the most popular text-books and the lectures of prominent professors, and are kept constantly revised, so that they may thoroughly represent the present state of the subjects upon which they treat.

☞ The authors have had large experience as Quiz-Masters and attaches of colleges, and are well acquainted with the wants of students.

☞ They are arranged in the most approved form, thorough and concise, containing over 600 fine illustrations, inserted wherever they could be used to advantage.

☞ Can be used by students of *any* college.

☞ They contain information nowhere else collected in such a condensed, practical shape. Illustrated Circular free.

No. 1. POTTER. HUMAN ANATOMY. Sixth Revised and Enlarged Edition. Including Visceral Anatomy. Can be used with either Morris's or Gray's Anatomy. 117 Illustrations and 16 Lithographic Plates of Nerves and Arteries, with Explanatory Tables, etc. By SAMUEL O. L. POTTER, M.D., Professor of the Practice of Medicine, Cooper Medical College, San Francisco; late A. A. Surgeon, U. S. Army.

No. 2. HUGHES. PRACTICE OF MEDICINE. Part I. Sixth Edition, Enlarged and Improved. By DANIEL E. HUGHES, M.D., Physician-in-Chief, Philadelphia Hospital, late Demonstrator of Clinical Medicine, Jefferson Medical College, Phila.

No. 3. HUGHES. PRACTICE OF MEDICINE. Part II. Sixth Edition, Revised and Improved. Same author as No. 2.

No. 4. BRUBAKER. PHYSIOLOGY. Ninth Edition, with new Illustrations and a table of Physiological Constants. Enlarged and Revised. By A. P. BRUBAKER, M.D., Professor of Physiology and General Pathology in the Pennsylvania College of Dental Surgery; Adjunct Professor of Physiology, Jefferson Medical College, Philadelphia, etc.

No. 5. LANDIS. OBSTETRICS. Sixth Edition. By HENRY G. LANDIS, M.D. Revised and Edited by WM. H. WELLS, M.D., Instructor of Obstetrics, Jefferson Medical College, Philadelphia. Enlarged. 47 Illustrations.

No. 6. POTTER. MATERIA MEDICA, THERAPEUTICS, AND PRESCRIPTION WRITING. Sixth Revised Edition (U. S. P. 1890). By SAMUEL O. L. POTTER, M.D., Professor of Practice, Cooper Medical College, San Francisco; late A. A. Surgeon, U. S. Army.

? QUIZ-COMPENDS ?—Continued.

- No. 7. **WELLS. GYNECOLOGY.** By WM. H. WELLS, M.D., Instructor of Obstetrics, Jefferson College, Philadelphia. 150 Illustrations.
- No. 8. **GOULD AND PYLE. DISEASES OF THE EYE AND REFRACTION.** A New Book. Including Treatment and Surgery, and a Section on Local Therapeutics. By GEORGE M. GOULD, M.D., and W. L. PYLE, M.D. With Formulæ, Glossary, Tables, and 111 Illustrations, several of which are Colored.
- No. 9. **HORWITZ. SURGERY, Minor Surgery, and Bandaging.** Fifth Edition, Enlarged and Improved. By ORVILLE HORWITZ, B.S., M.D., Clinical Professor of Genito-Urinary Surgery and Venereal Diseases in Jefferson Medical College; Surgeon to Philadelphia Hospital, etc. With 98 Formulæ and 71 Illustrations.
- No. 10. **LEFFMANN. MEDICAL CHEMISTRY.** Fourth Edition. Including Urinalysis, Animal Chemistry, Chemistry of Milk, Blood, Tissues, the Secretions, etc. By HENRY LEFFMANN, M.D., Professor of Chemistry in Pennsylvania College of Dental Surgery and in the Woman's Medical College, Philadelphia.
- No. 11. **STEWART. PHARMACY.** Fifth Edition. Based upon Prof. Remington's Text-Book of Pharmacy. By F. E. STEWART, M.D., PH.G., late Quiz-Master in Pharmacy and Chemistry, Philadelphia College of Pharmacy; Lecturer at Jefferson Medical College. Carefully revised in accordance with the new U. S. P.
- No. 12. **BALLOU. VETERINARY ANATOMY AND PHYSIOLOGY.** Illustrated. By WM. R. BALLOU, M.D., Professor of Equine Anatomy at New York College of Veterinary Surgeons; Physician to Bellevue Dispensary, etc. 29 graphic Illustrations.
- No. 13. **WARREN. DENTAL PATHOLOGY AND DENTAL MEDICINE.** Third Edition, Illustrated. Containing a Section on Emergencies. By GEO. W. WARREN, D.D.S., Chief of Clinical Staff, Pennsylvania College of Dental Surgery.
- No. 14. **HATFIELD. DISEASES OF CHILDREN.** Second Edition. Colored Plate. By MARCUS P. HATFIELD, Professor of Diseases of Children, Chicago Medical College.
- No. 15. **HALL. GENERAL PATHOLOGY AND MORBID ANATOMY.** 91 Illustrations. By H. NEWBERRY HALL, PH.G., M.D., late Professor of Pathology, Chicago Post-Graduate Medical School. Second Edition.
- No. 16. **DISEASES OF THE SKIN.** By JAY T. SCHAMBERG, M.D., Instructor in Skin Diseases, Philadelphia Polyclinic. With 99 handsome Illustrations.

Price, each, Cloth, .80.

Interleaved, for taking Notes, \$1.25.

In preparing, revising, and improving BLAKISTON'S ? QUIZ-COMPENDS ? the particular wants of the student have always been kept in mind.

Careful attention has been given to the construction of each sentence, and while the books will be found to contain an immense amount of knowledge in small space, they will likewise be found easy reading; there is no stilted repetition of words; the style is clear, lucid, and distinct. The arrangement of subjects is systematic and thorough; there is a reason for every word. They contain over 600 illustrations.

Morris' Anatomy

Second Edition,
Revised and Enlarged.

790 Illustrations, of which many
are in Colors.

Royal Octavo. Cloth, \$6.00 ; Sheep, \$7.00 ;
Half Russia, \$8.00.

From The Medical Record, New York.

"The reproach that the English language can boast of no treatise on anatomy deserving to be ranked with the masterly works of Henle, Luschka, Hyrtl, and others, is fast losing its force. During the past few years several works of great merit have appeared, and among these Morris's "Anatomy" seems destined to take first place in disputing the palm in anatomical fields with the German classics. The nomenclature, arrangement, and entire general character resemble strongly those of the above-mentioned handbooks, while in the beauty and profuseness of its illustrations it surpasses them. . . . The ever-growing popularity of the book with teachers and students is an index of its value, and it may safely be recommended to all interested."

****Handsome Descriptive Circular, with
Sample Pages and Colored Illustrations,
will be sent free upon application.**

WP 140 W456c 1899

47210940R



NLM 05242315 3

NATIONAL LIBRARY OF MEDICINE